

# ORGANIC FOOD FEDERATION



## Book 8 AQUACULTURE STANDARDS

# BI-VALVE MOLLUSCS

(Mussels and Oysters)

These standards are the copyright © 2005 of the Organic Food Federation

## CONTENTS

SECTION	CONTENTS	PAGE
<b>1</b>	<b>General Requirements</b>	<b>3</b>
1.1	Introduction	3
1.2	Principles of Organic Aquaculture	3
1.3	Labelling	4
1.4	Management & Control	4
1.5	Conversion	5
1.6	Breeding and Youngstock	6
1.7	Local and Environmental Impact	7
1.8	Water and Holding Facilities	8
1.9	Diet and Nutrition	9
1.10	Fish Welfare and Stock Management	10
1.11	Health Control	11
1.12	Harvesting	12
1.13	Records	13
	<b>Standards for Individual Species</b>	
<b>2</b>	<b>Oysters</b>	<b>14</b>
<b>3</b>	<b>Mussels</b>	<b>16</b>

## **1. GENERAL REQUIREMENTS**

### **1.1 INTRODUCTION & SCOPE**

- 1.1.1 There are currently no EEC Regulations embracing this organic sector.
- 1.1.2 These standards refer to the edible species of marine bivalve molluscs (hereinafter called molluscs), which are farmed in a protected environment. These include:

Oysters	<i>Ostrea edulis, Crassostrea gigas</i>
Mussels	<i>Mytilus edulis, Mytilus galloprovincialis</i>

which are natural to, or have been bred for more than 30 years in the region and are farmed in designated seawaters.

- 1.1.3 The OFF Shellfish Standards must be considered in the context of a whole farm or farming system that is being managed organically. Operators applying for registration for a fish farming enterprise must therefore also comply with all other sections of Organic Standards as well as EC Food Safety and Labelling Regulations.
- 1.1.4 The terms Permitted and Prohibited are used in the document to define the level of acceptance of products and/or practices. Any materials or practices which are not specifically Permitted or Prohibited must have the prior approval of OFF before being used.
- 1.1.5 All operators must be registered with their appropriate Fisheries, Aquaculture or Environmental Departments 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 water quality and prevention of the spread of disease with its discharge and environmental impact.

### **1.2 PRINCIPLES OF ORGANIC AQUACULTURE**

- 1.2.1 The principles underlying organic Shellfish systems are to maintain a healthy and sustainable aquatic ecosystem, which is protective of the welfare of the stock, which 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) For existing farms in conversion, the maintenance or enhancement of water quality and the surrounding ecosystem. For new farms, to minimise the impact (of the new farm) on water quality and the surrounding ecosystem.
- 1.2.3 The basic characteristics of organic shellfish aquaculture systems are:

ORGANIC FOOD FEDERATION AQUACULTURE STANDARDS  
**BI-VALVE MOLLUSCS**

- a) The production of stock of prime quality, free from artificial ingredients and with minimal contamination from the environment.
- b) Production methods that use natural inputs 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 the farmed stock by minimising stress, reducing the incidence of disease and nurturing the vitality of the farmed stock through meeting their physiological and behavioural needs.
- e) Management to high standards so as to minimise the need for intervention (by veterinary practitioners or marine biologists).
- f) The non-use of pesticides in and around the waters of the site.
- g) The application of appropriate standards for the goods and services used in organic shellfish aquaculture.
- h) The encouragement of the use of local resources and services wherever possible.

### 1.3 LABELLING

- 1.3.1 Mollusc stock produced in accordance with these Standards must be labelled as 'farmed' in conjunction with the 'organic' designation used in the sales description and in other literature as appropriate.

**Guidance Note:**

*Wild Shellfish species ie those which spend their life without restraint by nets, cages or other man made means and which have not been managed under approved organic standards cannot be accepted as organic and cannot be labelled as organic.*

*With farmed shellfish, seed and/or broodstock might sometimes be collected from the wild. When appropriate this will be acceptable to the OFF if the farmer has proof of origin and the wild stocks are from a defined sustainable source.*

### 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 the aquatic stock 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 must be drawn up by the operator in consultation where necessary 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.

ORGANIC FOOD FEDERATION AQUACULTURE STANDARDS  
**BI-VALVE MOLLUSCS**

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) Protection and Health monitoring of shellfish stocks.

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) Formalised procedures: -
  - i. 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.
  - ii. 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.
  - iii. to ensure that brought-in materials and services which 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.
  - iv. to ensure proper storage of brought-in materials where appropriate.
  - v. for monitoring and controlling all production, packing and processing operations, especially the maintenance of the aquatic stock welfare and health, water quality and environmental impact.
  - vi. for checking accuracy of calibration of measuring and testing equipment.
  - vii. 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.
  - viii. 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).
  - ix. for enabling product recall where necessary (and the person responsible for the procedure).
  - x. 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.
  - xi. 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 When a site has not been managed under these standards it needs to be converted. When spatting is a natural event, "conversion" is required so that the farm can be managed under these standards for a minimum of 1 production cycle
- 1.5.2 When the molluscs are produced in a hatchery or transferred as youngstock from another site for on-growing the new site will not require conversion providing it has not been used for mollusc production for the preceding production cycle
- 1.5.3 Conversion must take place according to a documented plan agreed with the Certification Body. The plan must be detailed in a site or company 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). Conversion may only begin after the operator of the aquacultural enterprise has agreed to abide by these standards and the site has been inspected by OFF or a competent inspection body recognised by the latter.
- 1.5.4 When a holding is converted, the units (sites) within that holding must all be converted such that all stock on the holding is managed to Organic Standards by the time the first batch is ready for sale as organic.

### Guidance Note:

*In the case of oysters, conversion starts when the site has been depleted of previous stock. In the case of mussels, the conversion starts when new ropes or nets are installed on a new site and are stocked with new youngstock. The conversion period shall be at least one production cycle for the organisms in question. During that time the stock must be managed to this Organic Standard, including implementation of the quality system.*

- 1.5.5 A stock 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 unless the non-organic unit undergoes a one production cycle conversion period (see 1.5.3 above) before resuming its organic status.

## 1.6 BREEDING AND JUVENILE STOCK

- 1.6.1 Breeds or sub-species should be chosen for their adaptation to the local environment and the production of high quality food.
- 1.6.2 Where applicable, breeding methods should be aimed at minimum interference with natural behaviour of the breeding animals and minimum application of highly technical/intensive rearing methods. Where spawning/spatting or initial growth is carried out in a hatchery, the operation must be registered with the appropriate authority (CEFAS in England, FRS in Scotland, DARD in Northern Ireland). The hatchery must also be approved and registered by an EU approved certification body certifying to the Organic Food Federation standards.

**Guidance Note:**

*The spat of certain stock (eg mussels) are mobile initially and attach themselves to convenient and suitable obstructions in their path for on-growing. In such cases natural spat are acceptable for rearing under organic conditions.*

*In any shellfish farm, a number of wild spat will occur adventitiously whenever spawning conditions are favourable. This is a natural process.*

- 1.6.3 Parent stock and youngstock must be kept and reared on organic production units except where stocking is by wild settlement of youngstock (eg. mussels and scallops). 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 The rearing of organically produced shellfish must be supervised by personnel who are technically competent in the application of shellfish farming and catching methods and who have an understanding of the principles and aims of organic production when they are applied to aquaculture.
- 1.6.5 The collection of shellfish for breeding must be undertaken with particular care for the welfare of the brood-stock and by trained and competent personnel.
- 1.6.6 Very young shellfish must be inspected daily (eggs using microscopy) to ensure they remain viable and do not show signs of unusually high mortality.
- 1.6.7 Juvenile shellfish may only be transported when they are fit and healthy and must be checked carefully before any transporting operation to verify this. Aquatic stocks displaying any obvious signs of distress must not be transported.
- 1.6.8 Transportation for re-laying of live molluscs must be effected with care avoiding unnecessary stress to them. The journey time must be kept at a minimum with the number and biomass of the stock in the transport container being such that their welfare is not compromised. Live molluscs must only be transported after draining and removal of open shells, but they must kept under damp and cool conditions, although not immersed. **It is not permitted to transport stock (for on-growing) from uncontrolled to controlled areas.**

**Explanation Note:**

*When transporting to be re-laid live molluscs should not be drained for longer than 12 hours. If the journey time is longer they may be totally immersed in sea water in Vivier trucks. Temperature, salinity and dissolved oxygen and ammonia levels must be continuously monitored during the journey. Normally transportation times are short (<12hr) and immersion is not necessary*

- 1.6.9 **Preferred:**  
Development of a production unit's own breeding programme.

**Permitted:**

Manipulation of water temperature by indirect heating or cooling of water when required at the hatchery only to help spat development to the point where they leave the hatchery and enter the (outdoor) nursery. To prevent stress/shock spat must not be transferred into outdoor nursery enclosures when the difference of water temperature exceeds 1 deg C.

**Prohibited**

- a) Triploid stocks.
- b) Genetically engineered stock or breeds.
- c) Manipulation of water temperature to force unnatural growth

## **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 stock.
  - c) Any initiatives for positive environmental management/enhancement.
  - d) 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 stock 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. The waters, benthic community 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 Water leaving the aquacultural operation must maintain or preferably improve the existing water quality classification of the receiving water.
- 1.7.7 Environmental management procedures should be developed in agreement with neighbouring fish farmers and landowners.
- 1.7.9 Use of herbicides or other agro-chemical pesticides, which are not allowed under Regulation 2092/91 on the certified unit, is prohibited.

## **1.8 WATER AND HOLDING FACILITIES (General Requirements for Marine Aquaculture)**

- 1.8.1 The waters in which the mollusc farm is located must comply with the EC Shellfish Waters Directive and must usually be Grade A\*. Quality may fall to grade B for aggregate periods up to 2months. Grade C waters are unacceptable. A consistently adequate movement of suitable quality water, which is appropriate to the needs of the stock, is essential to ensure clean and healthy conditions throughout the lifetime of the farming activity. Waters that become subject to a closure order or a voluntary closure resulting from toxic algal, chemical or other contamination will automatically have their certified status suspended until after the lifting of the order.

### **Explanation Note**

*Waters affected by bacteriological or algal contamination quickly normalise after the cause has been removed and the molluscs as bio-filter organisms play a part in this.*

### **EC Directive**

*Council Directive 91/492 (L268) defines the health conditions for the production and placing on the market of live bivalve molluscs.*

**UK Legislation**

*The Food Safety (Live Bivalve Molluscs and other Shellfish) (Hygiene) Regulations 1993 came into force 1/1/93 as the UK's means of implementing 91/492(EEC). This has been superseded by Statutory Instrument 1998 No 994 The Food Safety (Fishery Products and Live Shellfish) (Hygiene) Regulations 1998 (available from [www.legislation/hmsso.gov.uk](http://www.legislation/hmsso.gov.uk))*

**Categories of Shellfish Water:**

Category	E.coli /100g	Faecal coliforms /100g	Requirement
<b>A</b>	<230	<300	May go direct for human consumption
<b>B</b>	<4600	<6000	Must be depurated, heat treated or relaid to meet category A
<b>C</b>		<60000	Must be relaid for 2 months to meet category A or B. May also be heat treated by approved method

*Counts shown are in flesh and fluid*

*Category B is equivalent to approximately 300 faecal coliforms/100 water in 75% of samples*

- 1.8.2 Seawater quality should be monitored and recorded at a frequency that is agreed with the Certification Body and the relevant environmental monitoring agency. The tests carried out and frequency must be documented in the operator's quality manual. The following parameters, as appropriate, should be monitored at various tidal states:
- a) Water temperature
  - b) Ammonia/nitrogen
  - c) Biological oxygen demand
  - d) Suspended solids
  - e) Phosphate/nutrient levels
  - f) Dissolved oxygen
  - g) PH
  - h) Salinity
  - i) Chlorophyll
- 1.8.3 The method of aquaculture and/or hydrographical characteristics must permit good water circulation appropriate to the needs of the stock.
- 1.8.4 The design and operation of hatchery 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 mollusc production units must be sited as far as possible from sources of pollution, as determined by an environmental survey and agreed with the Certification Body, to ensure the risk of contamination is minimal.

**Explanation Note:**

*However organic mollusc farming may be carried out in the same waters as organic finfish farming as part of an agreed system of organic polyculture.*

- 1.8.6 Materials and compounds used in holding structures, production equipment and toxic antifouling preparations or paints must not be detrimental to the environment or to stock.
- 1.8.7 The water in hatchery holding facilities must be able to be replaced or emptied without the risk of stock escapes 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 discharge consents for the site. They must not adversely affect the surrounding environment or the water downstream within a tidal excursion.
- 1.8.9 Trays, bags, nets and floating structures must be securely moored, properly maintained and regularly checked to ensure they remain secure and undamaged. The construction material of nets and their supports should be smooth enough to prevent risk of injuring stock during stormy conditions.
- 1.8.10 Only non-polluting methods may be used to ensure the nets and support structures are kept clear of excessive weed and other fouling organisms.

## **1.9 DIET AND NUTRITION (Applicable to production of juveniles at hatcheries)**

- 1.9.1 Diets for aquaculture production must meet the nutritional needs of the stock appropriate to the stage in the life cycle.
- 1.9.2 Processors of algal pastes and other algal materials must be inspected and certified as conforming to these Standards.
- 1.9.3 The normal diet of molluscs is derived from natural algae and phytoplankton.
- 1.9.4 The feed should be offered using methods that are appropriate to the stock, its life stage, and natural feeding behaviour and minimising stress during feeding operations. Feeding uptakes must be monitored. Automatic feeding systems must be checked on a daily basis and maintained in good working order.

### **Recommended:**

- a) Encouragement of an access to natural sources of feed (*when possible*).

### **Permitted:**

- a) Vitamins, minerals and supplements from natural origin.  
b) For Edible Molluscs only, live algae suitable for the species being cultured at the hatchery.  
c) Algae pastes from species suitable for the species being cultured.

### **Restricted:**

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

### **Prohibited:**

- a) Growth regulators, hormones.  
b) Lipids derived by solvent extraction.  
c) Genetically modified organisms or products/ingredients derived from them.  
d) Any other substance or material not specified in the standards.

## **1.10 WELFARE AND STOCK MANAGEMENT**

- 1.10.1 Management must be aim at securing 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

**Explanation Note:**

*The five freedoms are expressions of principle.*

*Fear and Distress are difficult concepts to measure in molluscs; thermal discomfort can be controlled when transferring stock from one environment to another.*

*In sea farms the prime concern is to protect from predators, wherever possible without harm to the latter. Where the predator species is protected by law, appropriate permission must be obtained before undertaking approved control measures*

- 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. (ie husbandry practices, including feeding, stocking densities and water quality, shall ensure that developmental, physiological and behavioural needs of the farmed species are met.)
- 1.10.3 All routines involving handling of stock, e.g. catching, grading or transporting, must be carried out with the aim of minimising stress according to procedures that are outlined in the quality manual. (Handling is not required for any other reason.)
- 1.10.4 The following welfare parameters as appropriate must be monitored and recorded on a regular basis within the water body of the hatchery 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) Algae uptake (a measure of stock density and filtration activity)
- 1.10.5 The training needs of personnel engaged in the rearing of organically produced shellfish stock 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 molluscs is not compromised throughout the production cycle and up to the point of delivery of the harvested molluscs.
- 1.10.6 Stock should be inspected frequently (except where weather conditions make this impossible) in order to check on their health and welfare and where appropriate to remove mortalities.

**Guidance:**

*This can be achieved using divers (in the case of permanently submerged cultures) or by inspection at low tide (oysters in the intertidal range).*

- 1.10.7 When detected mortalities must be removed and the cause determined and recorded wherever possible. They must be quickly disposed of in a hygienic way (in accordance with Regulation 1774/2002EEC) to ensure there is no threat of disease spreading to farmed/wild stock or contamination of any watercourses.
- 1.10.8 In cases when high levels of mortality arise unexpectedly or are suspected or confirmed to have been caused by notifiable disease, the event must be reported to the appropriate Fish Health Inspectorate (CEFAS - England and Wales or FRS – Scotland, DARD- Northern Ireland).

- 1.10.9 Predators must be discouraged from damaging or stressing mollusc stocks by the use of effective means that are as far as possible non-destructive both on target and innocent 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 Adequate provision must be made for shading if necessary, especially in the hatchery environment where there may be exposure to strong sunlight
- 1.10.11 Movement of growing shellfish between holdings is only permitted if both holdings are managed according to this standard and providing the movement is not from an uncontrolled to a controlled area.

#### 1.11 HEALTH CONTROL

- 1.11.1 Sound organic management aims to produce healthy stock by best practice, including good stockman ship, 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 shellfish biologist which is to form part of the quality manual and should cover the following areas:
- General health and welfare of the stock on the unit
  - Identification of the main health issues on the unit and the measures to reduce or eliminate them
  - Measures to minimise disease outbreaks and encourage mollusc health generally.
  - Identification of predators and protective measures to minimise or eliminate their effect (allowing for existing regulations to protected endangered species).
  - Measures to be taken to ensure safe microbiological quality at time of harvesting.
- 1.11.3 Veterinary inputs are not used on mollusc production. When stock is suspected of disease through unexpectedly high mortality, or in the case of hatchery stock, when feeding is unusually low, samples of moribund molluscs should be sent to the appropriate Fish Health Laboratories who will conduct tests to determine the cause.
- 1.11.4 Only natural and minimally processed inputs may be used for mollusc production. Vaccines and veterinary medicines are not used in the grow out phase (see Restricted b antibiotics for hatchery juveniles).

##### **Recommended:**

- Natural algae and phytoplankton (for larvae, spat and juvenile growth)

##### **Permitted:**

- Algal Pastes (for juvenile growth)
- Iodophore (for hatchery equipment cleaning)
- Alcohol (for hand hygiene in hatcheries)

##### **Restricted:**

- EDTA (used in solution as an algal growth medium)
- Antibiotics (subject to documented case of need approved by certification body for hatchery juveniles only)

##### **Prohibited:**

- Hormone treatment of shellfish for human consumption.
- Malachite green (for treatment of water and shellfish).
- Synthetic pesticides, including organophosphate, pyrethroid and ivermectin products.
- Other chemically synthesised allopathic veterinary medicinal treatments not mentioned in these Standards.
- GMOs

## 1.12. HARVESTING

- 1.12.1 After harvesting the molluscs must be cleaned by hosing with fresh water or filtered and UV treated seawater and examined for signs of disease or poor health (opened shells must be removed and discarded according to section 1.10.7 of this standard). It is essential that the molluscs are hosed down on a level, well drained surface. Pools of water are unacceptable.

**Explanation Note:**

*If the molluscs are immersed their shells open and render them susceptible to contamination.*

- 1.12.2 All organically produced molluscs must be depurated prior to packing if the waters are grade B at the time of harvesting. Seawater which has been UV treated must be used to circulate in the depuration tanks.

**Prohibited:**

Harvesting of organic molluscs from Grade C (or worse) waters.

- 1.12.3 After being cleaned and depurated the molluscs must be drained and transferred to clean bags or boxes for transfer to market or to a licensed processor/packer. The containers must be clearly marked to show the species harvested, the quantity, the date of collection and the date of transfer (if different). The labels must also be traceable to the farm and section of farm concerned
- 1.12.4 After draining, molluscs must not be immersed in water but they must be kept cool (1-4°C) and protected from dehydration.

## 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 five 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 Liaison Officer of the Local and Registration Authorities.
  - d) Health certificates
  - e) Staff training records.
  - f) 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.
  - g) Details of complaints, responses made and consequential actions taken.
  - h) 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, import certificates, date, stock, age, quantities, origin, status and history.

- b) Stock movements.
- c) Purchases, date, quantities and details of use of all inputs.
- d) Specifications for all purchased materials and services which have a critical bearing on the organic integrity of the molluscs produced and supplied under an organic designation.
- e) Details of all management activities as defined in the quality manual (fallowing and rotation of enclosures, grading, and harvesting).
- f) Measurements made of 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.
- i) Details of carriers used for transporting molluscs

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

- a) Purchases and specifications for algae pastes if and when used.
- b) Purchases of replacement algae cultures.
- 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 Records must be kept of any chemicals that are used for cleaning and sanitation in hatchery operations.

1.13.6 Depuration Records

- a) Batch Number (for traceability)
- b) Water temperature and flow rate at various times during cycle
- c) Salinity
- d) UV lamp checked Y/N and UV usage time
- e) Time that depuration commences and finishes
- f) Quantity of molluscs depurated
- g) Molluscs discarded because still open after drain down.
- h) Dissolved oxygen in tanks during cycle

## **ADDITIONAL STANDARDS FOR INDIVIDUAL SPECIES**

### **2. OYSTERS**

#### **2.1 Stock:**

Flat oyster – *Ostrea edulis*

Pacific Oyster – *Crassostrea gigas*

#### **2.2 Oyster Hatcheries**

2.2.1 In oyster hatcheries, alarm systems and backup facilities must be sufficient to provide against water supply failure or other major problems.

**Preferred:**

- a) Back-up aeration systems.
- b) Alarm systems.

**Permitted:**

Back-up oxygenation systems.

**Prohibited:**

- a) Oxygenation systems to enhance production.
- b) Copper-based and other toxic anti-foulants.

- 2.2.2 Cultch (empty shells) used for cultivating the oyster larvae must be free from infectious organisms. The use of fresh cultch from oyster or mussel beds is not permitted.

**Explanation Note:**

*Cultch must naturally dried and sterilised by UV or natural sunlight before being ground to the required particle size*

### 2.3 Egg Fertilisation

Production and fertilisation of eggs may be carried out in small seawater tanks where temperature, salinity, pH and oxygen levels are monitored at daily intervals and adjusted if required. Regular health checks must be carried out by a qualified biologist or veterinarian who specialises in molluscs. The eggs of *Ostrea edulis* are fertilised within the shell, while those of *Crassostrea gigas* are released into the surrounding water to be fertilised. When the eggs have been fertilised they are collected by filtering the water from the culture tank through a fine mesh (~0.05mm)

### 2.4 Nursery Phase

2.4.1 The infant oysters are then grown on to approx 10-12mm. The stock is graded to maintain a reasonably constant biomass. All reasonable precautions must be taken to ensure that molluscs of other species than that intended for farming are removed. They must then be re-laid onto prepared beds or in bags in the inter-tidal range, where they grow to marketable size, minimum of 40 grams. Young oysters may be sold on for finishing by a third party, but their movement is strictly controlled to prevent possibility of infection (see sections 1.6.7 and 1.6.8).

2.4.2 In order to meet nutritional needs of juvenile stock, mineral and vitamin supplementation may be included in the diet in accordance with the general standards for livestock feeds **and** the natural requirements of the farmed stock, subject to the advice of a qualified shellfish biologist (expert in mollusc health).

### 2.5 Growth Phase

2.5.1 During their second year at approximately 10 –12 grams, oysters are spread in the inter-tidal range.

- a) either directly on suitable seabed (youngstock may be placed on the seabed in bags initially)
- b) or in bags on trestles,
- c) or in suspended cultivation

2.5.2 The inter-tidal beds must be as free as possible from accumulations of rock, debris or other accumulations which may house predators, parasites and trap tidal borne detritus.

**Permitted:**

The use of netting surrounding beds to protect from crabs and starfish.

## 2.6 Harvesting and Cleaning

- 2.6.1 This is carried out when oysters have reached market size. Only oysters that have been continuously reared under the conditions above qualify for certification.
- 2.6.2 Local EHOs should monitor bacterial levels on all commercial beds or farm sites. To meet EU and OFF requirements depuration tanks are used prior to marketing. The physical, chemical and microbiological quality of the water must be continuously monitored and recorded. To avoid stress the temperature, oxygen content, salinity and pH are particularly important criteria.

## 2.7 Transport and Marketing

For transport, depurated oysters are drained and transported in bags, tubs or polythene crates. They must never be re-immersed after being depurated but must be protected from dehydration and held at chill temperature (+2 to +4<sup>0</sup>C). The oyster containers must be clearly marked to show the grade and quantity, the date of harvesting, the name or reference number of the aquatic farm and the certification mark of the lot issued by the Federation.

## 2.8 Labelling

Labels must clearly show all statutory information and the numbered seal issued by the Federation

## 3 MUSSELS

### 3.1 Stock:

In the UK the stock that is normally farmed is *Mytilus edulis*

### 3.2 Source:

The sea-borne spat attach themselves to any suitable obstruction in the tidal flow. If water conditions are satisfactory they will remain attached there for life. Farming is carried out using either suspended nets or ropes. If conditions are unsatisfactory the spat will detach and drift away. The source must be a site which has been approved and certified by the Federation (or by another approved EC Certification body certifying to OFF bivalve mollusc standards) in addition to any requirements for the consents for the farm.

### 3.4 Harvesting and Cleaning

Mussels may be harvested manually or using approved mechanical means (the certification body must be satisfied that the equipment does not pollute the mussel beds or environment and that it does not cause damage to the mussels). Hosing prior to depuration cleans the mussels.

### 3.6 Transport and Marketing

For transport, depurated mussels are drained and transported in bags, tubs or polythene crates. They must **never** be re-immersed after depurating, but must be protected from dehydration and held at chill temperature (0-4<sup>0</sup>C). The mussel containers must be clearly marked to show the grade and quantity, the date of harvesting, the name or reference number of the aquatic farm and the certification mark of the lot issued by the Federation.

### 3.7 Labelling : see section 1.3