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Module III: Regulatory framework of aquaculture in the EU, with special focus on organic aquaculture

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Module Description

- It is an **EU policy goal to increase aquaculture production**, as clearly expressed in the reformed Common Fisheries Policy (CFP) adopted in 2013. Hence, the EU has launched several initiatives to improve the conditions for aquaculture growth in Europe, where regulatory and administrative issues, including area access, for a long time have been considered important reasons for the stagnation in production.
- The aim of this thematic session is **to contribute with knowledge on some of the challenges that aquaculture producers are facing in Europe** related to access to production space. Taking the EU policy on aquaculture, in particular the strategic guidelines for aquaculture development and the Marine Spatial Planning Directive 2014, as a departure, national policies to promote aquaculture will be analysed. The focus will be on initiatives related to marine spatial planning and the promotion of area access.
- The session will be organised as a short lecture accompanied with information on where to find relevant publicly available information to learn more on the subject related to your own or selected country.

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Module Aim

Teach aquaculture stakeholders about the most relevant aspects of **EU policy on aquaculture**, and specifically about the requirements of the EU Organic Regulation in context with organic aquaculture production

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Learning objectives

At the completion of this module participants will be able to:

1. **Identify** EU policies on aquaculture (regulations, guidelines, and collaborative arrangements)

2. **Explain** the general production rules under organic aquaculture

3. **Describe** the species-specific production rules under organic aquaculture

4. **Distinguish** the hatchery management issues and requirements in organic aquaculture

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Module Outlines

1	**A: EU policy on aquaculture**		
2	**B: Organic aquaculture**	**Part I**: General production rules	2.1.1 Regulatory framework & scope 2.1.2 Most relevant documentation required from organic aqua farmers 2.1.3 Record keeping 2.1.4 Water quality & environment 2.1.5 Husbandry practices 2.1.6 Parallel production 2.1.7 Conversion periods 2.1.8 Livestock species and origins 2.1.9 Feed and feeding 2.1.10 Health and welfare: medical treatments 2.1.11 Health and welfare: cleaning and disinfection 2.1.12 Animal welfare 2.1.13 Harvesting, transporting live fish, and slaughtering
		Part II: Species-specific production rules	
		Part III: Hatchery management	
3	**Glossary**		
4	**References & Linkography**		

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A: EU policy on aquaculture

- **EU does not have a common aquaculture policy, but policies and regulations addressing and relevant for aquaculture**

- Regulatory challenges and access to production sites identified as important obstacles for growth in production
- Growth ambitions for European Aquaculture

2013 CFP

- Non-binding union strategic guidelines for aquaculture development
  - Member States to develop Multiannual national strategic plans for aquaculture 2014-2020 by June 2014
  - Integrate aquaculture into marine, coastal and inland spatial planning

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A: EU policy on aquaculture

❑ Marine Spatial Planning Directive 2014

- Member states to establish and implement MSP, including dedicating areas for aquaculture by March 2021

❑ 2021 New strategic guidelines for European Aquaculture 2021-2030

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Central documents and web-pages

- Strategic Guidelines for European Aquaculture
  https://ec.europa.eu/oceans-and-fisheries/ocean/blue-economy/aquaculture/aquaculture-guidelines_it

- **Summary of the national aquaculture plans of the Member States**
  https://ec.europa.eu/oceans-and-fisheries/ocean/blue-economy/aquaculture/aquaculture-multiannual-national-plans_en

- **European MSP Platform**
  https://maritime-spatial-planning.ec.europa.eu/msp-practice/database

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B: Organic Aquaculture

Part I: General production rules

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Regulatory framework (1)

NEW Organic Regulation (EU) **2018/848** (repealing Council Regulation 834/2007 and 889/2008) implemented since 1.1.2022

Plus several Delegated Acts and Implementing Acts

Note: Regulation references in this presentation refer to Reg. 2018/848, unless otherwise mentioned

Suggestion: IFOAM Organics Europe developed guidelines to help you navigate through the various Regulations: https://www.ifoam.bio/news/eu-organic-regulation-guide-online-now-cheaper-members

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Regulatory framework (2)

Subject Matter	Relevant Acts
Production rules for algae and aquaculture animals	• Part III of Annex II of Reg. 2018/848
(Aqua) Feed for carnivorous aquaculture animals	• Regulation 2020/427
(Animal) minimum surface for the indoor and outdoor areas	• Regulation 2020/464
(Aqua) Feed for certain aquaculture animals and on aquaculture parasite treatments	• Regulation 2021/716
(Aqua) juveniles for aquaculture	• Regulation 2020/427
production rules in case of catastrophic circumstances	• Regulation 2021/2146
Authorized products and substances	• Reg. 2021/1165
Record Keeping	• Reg. 2021/1691

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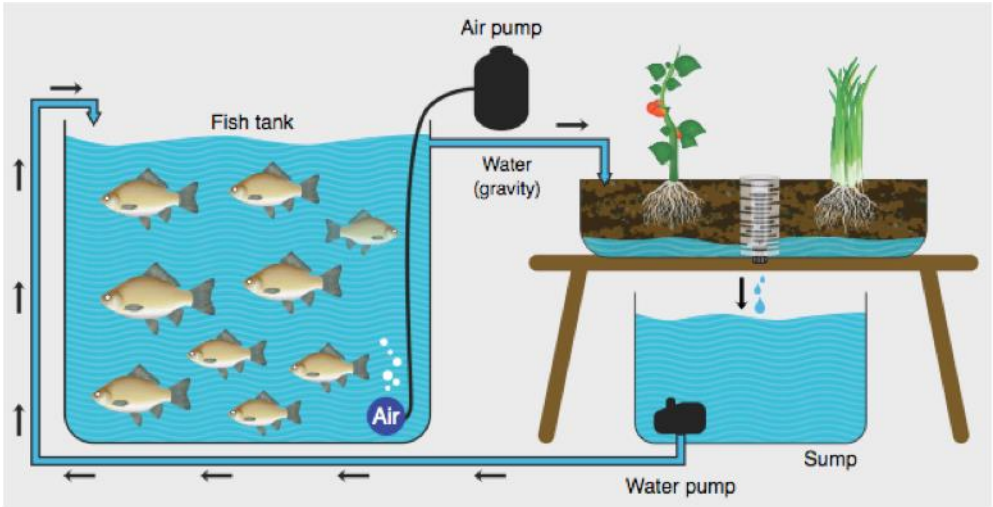
Scope

- Aquaculture species listed in Annex II of Reg 202/464
- Algae, including microalgae

Please note:

Closed recirculating aquaculture systems (RAS) and **aquaponics** are excluded from certification (exception: hatcheries and nurseries)

RAS



Aquaponic

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Most relevant documentation required from organic fish farmers

- Part III / 1.5 – 1.9: **Sustainable management plan**
- Part III / 1.3: **Environmental assessment** (only for producers producing ***more than 20 tonnes*** of aquaculture products per year)
  Required content: shall be based on **Annex IV to Directive 2011/92/EU**
- Part III / 3.1.4.1.c: **Animal health management plan**

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Record keeping

In general:
Art. 34. 5: Operators shall keep records in accordance with this Regulation on the different activities they engage in.

→ **This means, record keeping is essential for organic certification! All activities related to organic farming practices need to be recorded, so that CB can verify organic compliance during audit.**

Please note: specific record keeping is listed in individual chapters

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Water quality & environment

- Part III / 1.1: Operations shall be situated in **locations that are not subject to contamination**, or with pollutants that would **compromise the organic nature** of the products *(for example: conventional agriculture, industry)*

- Part III / 3.1.5.9: For aquaculture animal production in fishponds, tanks or raceways, farms shall be equipped with either **natural-filter beds, settlement ponds, biological filters or mechanical filters to collect waste nutrients** (*to improve the quality of the effluent*). **Effluent monitoring** shall be carried out at regular intervals where appropriate

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Husbandry practices (1)

Part III/3.1.5

- The **husbandry environment** of the aquaculture animals shall be designed in such a way that, in accordance with their species-specific needs, the aquaculture animals:

a) have sufficient space for their welfare and have the relevant stocking density

b) are kept in water of good quality with an adequate flow and exchange rate, sufficient oxygen levels and keeping a low level of metabolites;

c) are kept in temperature and light conditions in accordance with the requirements of the species and having regard to the geographic location

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Husbandry practices (2)

Part III/3.1.5

- The condition of the fish (such as fin damage, other injuries, growth rate, behaviour expressed and overall health) and the water quality shall be monitored and taken into account

- The design and construction of aquatic containment systems shall provide flow rates and physiochemical parameters that safeguard the animals' health and welfare, and that provide for their behavioural needs

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Husbandry practices (3)

Part III/3.1.5

- **Containment systems at sea** shall meet the following conditions:

(a) they shall be located where water flow, depth and water-body exchange rates are adequate to minimise the impact on the seabed and the surrounding water body;

(b) they shall have suitable cage design, construction and maintenance with regard to their exposure to the operating environment.

- Containment systems shall be designed, located and operated to minimise the risk of escape incidents.

- If fish or crustaceans escape, appropriate action shall be taken to reduce the impact on the local ecosystem, including recapture where appropriate. Records shall be kept.

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Husbandry practices (4)

Part III/3.1.5

- Rearing units **on land** shall meet the following conditions:

a) flow-through systems shall allow the monitoring and control of the flow rate and water quality of both in-flowing and out-flowing water;
b) at least 10 % of the perimeter (‘land-water interface’) area shall have natural vegetation

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Husbandry practices (5)

Part III/3.1.5

→ Record keeping (3.1.5.3)

Operators shall keep records of monitoring and maintenance measures concerning animal welfare and water quality. In case of fertilisation of ponds and lakes, the operators shall keep records of the application of fertilisers and soil conditioners, including the date of application, the name of the product, the amount applied, and the location of the application concerned.

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Parallel production of organic and conventional products

Part III / 1.2 : Is generally possible!

But…

Grow-out:
Organic and non-organic production units shall be **separated adequately**. Such separation measures shall be based on the natural situation, separate water distribution systems, distances, the tidal flow, the upstream and the downstream location of the organic production unit.
→ **No** specific distance between organic and non-organic units defined by the Regulation.
It is up to the CB to decide if separation measure is adequate!

Hatcheries/nurseries:
Clear physical separation between the units and a **separate water distribution system** required

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Example: Parallel production possible?

The separation distance between organic net cages (within the yellow circle) and non-organic cages is not sufficient.

→ Certification in this (hypothetic) case not possible

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Conversion periods

Part III / 3.1.1:

(a) for facilities that **cannot be drained, cleaned and disinfected**, a conversion period of **24 months**;

(b) for facilities that have been **drained, or fallowed**, a conversion period of **12 months**;

(c) for facilities that have been **drained, cleaned and disinfected** a conversion period of **6 months**;

(d) **for open water facilities** including those farming bivalve molluscs, a **three-month conversion period**.

2.1.1: The conversion period for a production unit for **algae collection** shall be six months.
2.1.2: The conversion period for a production unit for **algae cultivation** shall be a period of six months or one full production cycle, whichever is the longer

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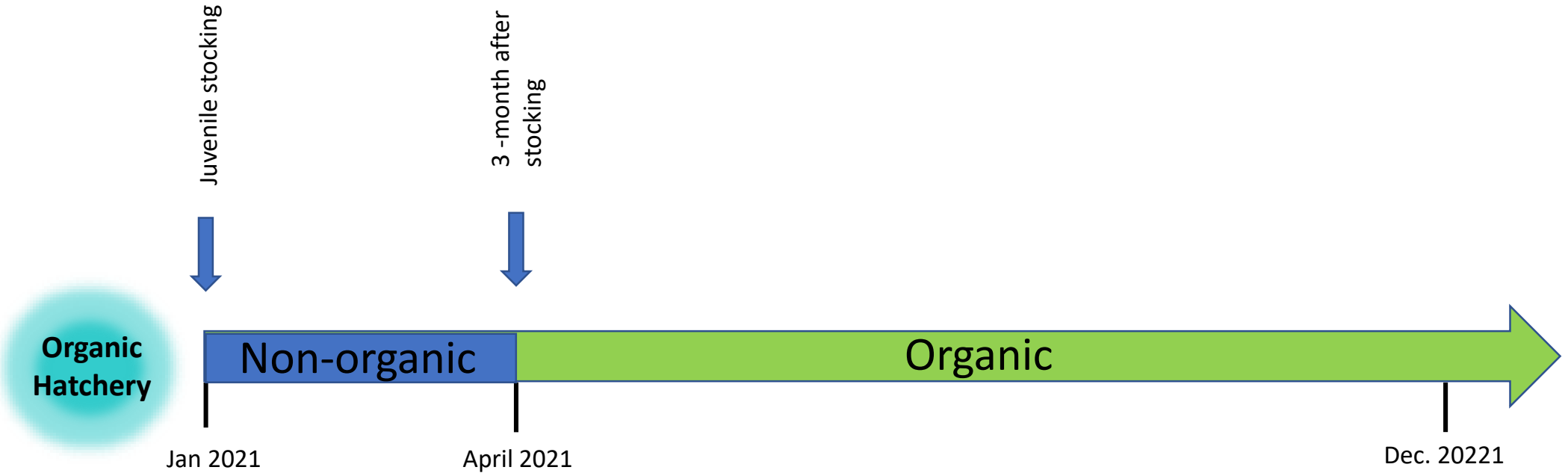
Example for conversion period: open water facility for salmon farming *(= 3-month conversion period)*



Livestock species and origins (1)

Part III / 3.1.2.1: **Locally grown species** shall be used

'locally grown species' in the framework of aquaculture and seaweed production, means those which are **neither alien nor locally absent** species under Council Regulation (EC) No 708/2007 (3).
Those species listed in Annex IV of Regulation (EC) No 708/2007 may be considered as locally grown species

'locally grown species' means aquaculture species which are **neither alien nor locally absent** species

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Livestock species and origins (2)

Part III / 3.1.2.1: Requirement for **100% organic juveniles**! → Young fish have to originate from certified organic hatcheries, or from own (organic) reproduction.

Also allowed: **natural influx** of fish or crustacean larvae and juveniles when filling ponds, containment systems and enclosures.

→ Record keeping (3.1.2.4.)
Operators shall keep records of the origin of animals, identifying the animals/batches of animals, the date of arrival and type of species, the quantities, the organic or non-organic status, and the conversion period.'

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Feed and feeding (1)
Part III/3.1.3

- The **plant fraction** of feed shall be **organic**
- The feed fraction **derived from aquatic animals (e.g. fishmeal and –oil)** shall originate from organic aquaculture or from fisheries that have been certified as sustainable under a scheme recognised by the competent authority in line with the principles laid down in Regulation (EU) No 1380/2013
- **No antibiotics and hormones** used **to promote growth** and no **synthetic growth agents**
- No synthetic **appetite-enhancers** or synthetic **flavour-enhancers,**
- No synthetic **amino-acids**
- No synthetic **colouring agents** and **pigments**
- No synthetic **anti-oxidants**
- **Vitamins, minerals are allowed** (non-organic)

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Feed and feeding (2)

→ Record keeping

‘3.1.3.5. Operators shall keep records of specific feeding regimes, in particular, on the name and quantity of feed and the use of additional feed, and the respective animals/batches of animals fed.’

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Health and welfare: medical treatments (1)

Part III/3.1.4.2

- Use of „**natural**“ therapeutics (such as substances from plants, natural immunostimulants, probiotics) shall be given preference. Only if no alternative treatment exists, chemical **allopathic drugs** (such as antibiotics) may be administered after **veterinary prescription**

- **Prophylactic treatment** with synthetic veterinary drugs is **prohibited**.

- **Vaccinations** are permitted.

- The use of **allopathic treatments** (for example antibiotics) is limited to **two courses of treatment per year** (with the exception of vaccinations)
  Production cycle of less than a year → a limit of **one** allopathic treatment applies

- The use of **parasite treatments**, not including compulsory control schemes operated by Member States, shall be limited to **twice per year** or **once per year** where the production cycle is less than 18 months.

- For biological control of **ectoparasites** (e.g. sea lice), preference shall be given to the use of cleaner fish and to the use of freshwater, marine water and sodium chloride solutions

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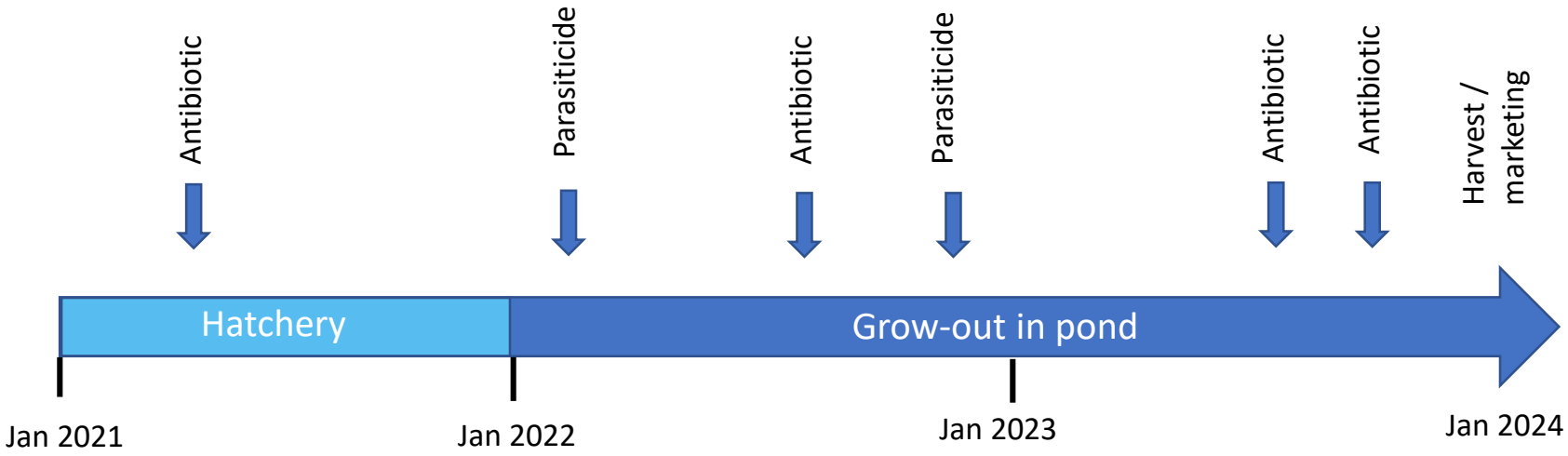
Example: treatment of salmon with antibiotics and parasiticide

(production cycle > 1 year)



Question: Can be certified organic?

Answer: Yes. Because not more than two allopathic treatments and not more than two parasite treatments per year applied

Health and welfare: medical treatments (2)

- The **withdrawal period** for allopathic veterinary treatments and parasite treatments shall be **twice the legal withdrawal period** as referred to in Article 11 of Directive 2001/ 82/EC or in a case in which this period in not specified 48 hours.

- Whenever veterinary medicinal products are used, such use is to be **declared to the control body**. Treated stock shall be **clearly identifiable**.

→ Record keeping (3.1.4.3):
Operators shall keep records of the disease prevention measures applied giving details of fallowing, cleaning and water treatment, and of any veterinary and other parasite treatment applied and in particular, the date of treatment, diagnosis, the posology, the name of the treatment product, and veterinary prescription for veterinary care, where applicable, and withdrawal periods applied before aquaculture products can be marketed and labelled as organic.'

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Health and welfare: cleaning and disinfection (1)
(Art. 12 of Reg. 2021/1165)

Holding systems, equipment and utensils shall be properly cleaned and disinfected. Only products listed in Reg 889 / **Annex VII**, Sections 2.1 to 2.2 may be used until 31 December 2023

→ See next page

→ However, among the authorized products, the following can not be used for biocidal products in aquaculture units:

- caustic soda;
- copper sulphate;
- potassium permanganate;
- tea seed cake made of natural camelia seed;
- humic acid;
- peroxyacetic acids with the exception of peracetic acid

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Products for cleaning & disinfection

Reg 889 / Annex VII, Sections 2.1 to 2.2

2. Products for cleaning and disinfection for aquaculture animals and seaweed production referred to in Articles 6e(2), 25s(2) and 29a.

2.1. Subject to compliance with relevant Union and national provisions as referred to in Article 16(1) of Regulation (EC) No 834/2007, and in particular with Regulation (EU) No 528/2012 of the European Parliament and of the Council (1), products used for cleaning and disinfection of equipment and facilities in the absence of aquaculture animals may contain the following active substances:

— ozone

— sodium hypochlorite

— calcium hypochlorite

— calcium hydroxide

— calcium oxide

— caustic soda

— alcohol

— copper sulphate: only until 31 December 2015

— potassium permanganate

— tea seed cake made of natural camelia seed (use restricted to shrimp production)

— mixtures of potassium peroxomonosulphate and sodium chloride producing hypochlorous acid.

2.2. Subject to compliance with relevant Union and national provisions as referred to in Article 16(1) of Regulation (EC) No 834/2007, and in particular with Regulation (EU) No 528/2012 and Directive 2001/82/EC of the European Parliament and of the Council (1), products used for cleaning and disinfection of equipment and facilities in the presence as well as in the absence of aquaculture animals may contain the following active substances:

— limestone (calcium carbonate) for pH control

— dolomite for pH correction (use restricted to shrimp production)

— sodium chloride

— hydrogen peroxide

— sodium percarbonate

— organic acids (acetic acid, lactic acid, citric acid)

— humic acid

— peroxyacetic acids

— peracetic and peroctanoic acids

— iodophores (only in the presence of eggs).

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Health and welfare: cleaning and disinfection (2)

Part III / 3.1.4.1.e:
bio-fouling organisms shall be removed only by physical means or by hand and where appropriate returned to the sea at a distance from the farm.

→ No use of synthetic anti-fouling agents (e.g. copper based) on net-cages

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Animal welfare (1)

Part III / 3.1.6.

- All persons involved in keeping aquaculture animals shall possess the necessary basic knowledge and skills as regards the health and the welfare needs of those animals.

- The handling of aquaculture animals shall be minimised. Proper equipment and protocols shall be used to avoid stress and physical damage. Grading operations shall be kept to a minimum and shall only be used where required to ensure fish welfare

- The following restrictions shall apply to the use of artificial light:
  a) for prolonging natural day length, it shall not exceed a maximum that respects the ethological needs, geographical conditions and general health of the animals; this maximum shall not exceed 14 hours per day, except where necessary for reproductive purposes;
  b) abrupt changes in light intensity shall be avoided at the changeover time through the use of dimmable lights or background lighting.

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Animal welfare (2)

Part III / 3.1.6.

- Aeration shall be permitted to ensure animal welfare and health. Mechanical aerators shall be preferably powered by renewable energy sources.

- Oxygen may only be used for uses linked to animal health and welfare requirements and for critical periods of production or transport, and only in the following cases:
  (a) exceptional cases of a change in temperature, a drop in atmospheric pressure or accidental water pollution;
  (b) occasional stock management procedures, such as sampling and sorting;
  (c) in order to assure the survival of the farm stock

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Harvesting, transporting live fish, and slaughtering (1)

Part III / 3.1.6.9: **Slaughter techniques** shall render **fish immediately unconscious and insensible to pain**.
Handling prior to slaughter shall be performed in a way that avoids injuries while keeping suffering and stress at a minimum. Differences in harvesting sizes, species, and production sites shall be taken into account when considering optimal slaughtering method

Acceptable slaughtering / anesthetization (for example):

- Electrical stunning
- Mechanical stunning (= hitting the head)
- Ice: for invertebrates (e.g. shrimp)
- CO2 is not acceptable for fish

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Harvesting, transporting live fish, and slaughtering (2)

Part III / 3.1.6.6. and Annex III / 4.: **Transport:**

- Appropriate measures shall be taken to keep the duration of the transport of aquaculture animals to a minimum
- Live fish shall be transported in suitable tanks with clean water which meets their physiological needs in terms of temperature and dissolved oxygen.
- Before transport of organic fish and fish products, tanks shall be thoroughly cleaned, disinfected and rinsed.
- Precautions shall be taken to reduce stress. During transport, the density shall not reach a level which is detrimental to the species.
- Records shall be kept for operations referred to above points

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B: Organic Aquaculture

Part II: Species-specific production rules

DETAILED RULES WITH RESPECT TO THE STOCKING DENSITY AND THE SPECIFIC CHARACTERISTICS OF PRODUCTION SYSTEMS AND CONTAINMENT SYSTEMS FOR AQUACULTURE ANIMALS are listed in Reg. 2020/464, Annex II

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Feeding (1)

Specific rules on feed for carnivorous aquaculture animals (Part III, 3.1.3.3)

Feed for carnivorous aquaculture animals shall be sourced with the following priorities:

(a) organic feed of aquaculture origin;

(b) fish meal and fish oil from organic aquaculture trimmings sourced from fish, crustaceans or molluscs;

(c) fish meal and fish oil and feed material of fish origin derived from trimmings of fish, crustaceans or molluscs already caught for human consumption in sustainable fisheries;

(d) fish meal and fish oil and feed material of fish origin derived from whole fish, crustaceans or molluscs caught in sustainable fisheries and not used for human consumption;

(e) organic feed materials of plant or animal origin; plant material shall not exceed 60 % of total ingredients.

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Feeding (2)

Specific rules on feed for certain aquaculture animals (Part III, 3.1.3.4.)

In the **grow-out phase**, fish in inland waters, **penaeid shrimps** and **freshwater prawns** and **tropical freshwater fish** shall be fed as follows:

(a) they shall be fed with feed naturally available in ponds and lakes;

(b) where natural feed referred to in point (a) is not available in sufficient quantities, organic feed of plant origin, preferably grown on the farm itself, or algae may be used. Operators shall keep documentary evidence of the need to use additional feed;

(c) where natural feed is supplemented in accordance with point (b):

- (i) the feed ration of penaeid shrimps and freshwater prawns (*Macrobrachium spp*.) may consist of a maximum of 25 % fishmeal and 10 % fish oil derived from sustainable fisheries;
- (ii) the feed ration of siamese catfish (Pangasius spp.) may consist of a maximum of 10 % fishmeal or fish oil derived from sustainable fisheries.

→For **Tilapia**: no fishmeal and –oil allowed for feeding!

→Note: the above restrictions do not apply for **hatchery** feed!

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Feeding (3)

With regard to **bivalve molluscs and other species which are not fed by man**, but instead feed on natural plankton, the following rules shall apply:

(a) such filter-feeding animals shall receive all their nutritional requirements from nature, except in the case of juveniles reared in hatcheries and nurseries;

(a) the growing areas shall be suitable from a health point of view and shall either be of high ecological status as defined by Directive 2000/60/EC or of good environmental status as defined by Directive 2008/56/EC or of equivalent quality to:
- the production zones classed as A in Regulation (EC) No 854/2004, until 13 December 2019,
- or the corresponding classification areas set out in the implementing acts adopted by the Commission in accordance with Article 18(8) of Regulation (EU) 2017/625, from 14 December 2019

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Requirements for algae

Part III, 2.2

Note: Both the wild collection of algae as well as cultivation can be certified organic!

The requirements for algae also apply to microalgae (e.g. Spirulina, Chlorella)

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Requirements for algae (1)

Part III, 2.2

Water quality:

The growing areas are suitable from a health point of view and are of high ecological status as defined by Directive 2000/60/EC, or are of equivalent quality to:

— the production zones classed as A and B in Regulation (EC) No 854/2004 of the European Parliament and of the Council (1), until 13 December 2019, or

— the corresponding classification areas set out in the implementing acts adopted by the Commission in accordance with Article 18(8) of Regulation (EU) 2017/625, from 14 December 2019;

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Requirements for algae (2)
Part III, 2.2

Algae cultivation:

- Algae culture at **sea** shall **only utilise nutrients naturally occurring in the environment**, or from organic aquaculture animal production
- In **facilities on land where external nutrient sources are used** the nutrient levels in the effluent water shall be verifiably the same, or lower, than the inflowing water. Only nutrients of plant or mineral origin and as listed in Annex I of 889 may be used → **no fertilizer of animal origin!**
- **Culture density or operational intensity shall be recorded**
- Ropes and other equipment used for growing algae shall be **reused or recycled** where possible
- **Bio-fouling organisms** shall be removed only by physical means or by hand and where appropriate returned to the sea at a distance from the farm.
- **Cleaning** of equipment and facilities shall be carried out by physical or mechanical measures. Where this is not satisfactory only substances as listed in Annex VII, Section 2 may be used.

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Requirements for algae (3)
Part III, 2.2

Collection of wild grown algae:

- The **collection** does not affect the **long-term stability** of the natural habitat or the maintenance of the species in the collection area
- **Documentary accounts** shall be maintained → to verify that the harvesters have supplied only wild algae produced in accordance with the Regulation
- Harvesting shall be carried out in such a way that the amounts harvested **do not cause a significant impact on the state of the aquatic environment**. Measures shall be taken to ensure that algae can regenerate, such as harvest technique, minimum sizes, ages, reproductive cycles or size of remaining seaweed
- If algae are harvested from a **shared or common harvest area**, documentary evidence shall be available that the total harvest complies with this Regulation

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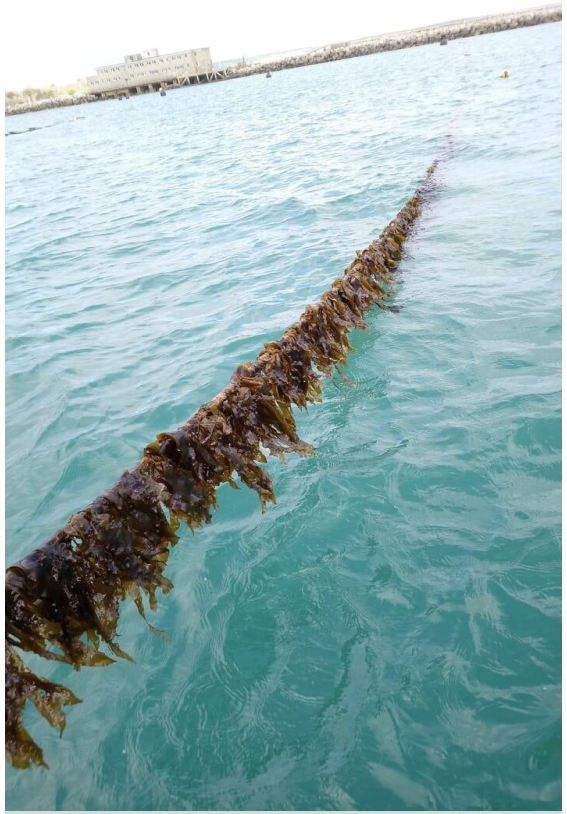
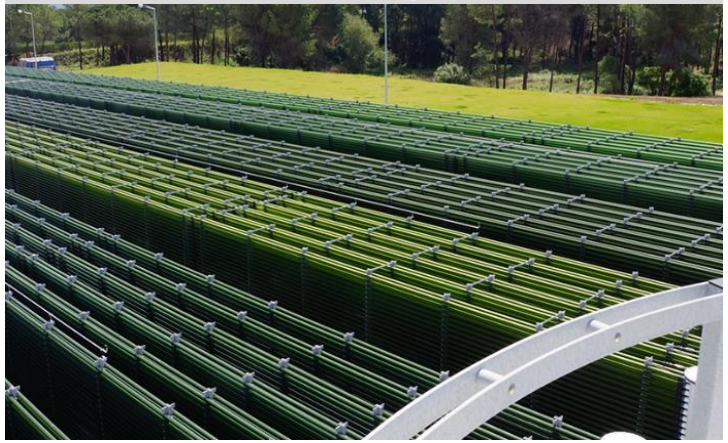


Algae farming in England
© Jurassic Sea Farms

Photobioreactors for Chlorella production; Portugal
www.allmicroalgae.com



Collection of wild grown algae in France

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Detailed rules for molluscs (1)

Part III, 3.2.1

Origin of seed

With regard to the origin of seed, the following rules shall apply:

a) wild seed from outside the boundaries of the production unit may be used in the case of bivalve shellfish, provided that there is no significant damage to the environment, provided that it is permitted by local legislation and provided that the wild seed comes from:

i. settlement beds which are unlikely to survive winter weather or are surplus to requirements;

ii. or natural settlement of shellfish seed on collectors;

b) for the cupped oyster (Crassostrea gigas), preference shall be given to stock which is selectively bred to reduce spawning in the wild;

Wild seed may only be collected after the competent authority has granted authorisation to do so

Record keeping: records shall be kept of how, where and when wild seed was collected to allow traceability back to the collection area

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Detailed rules for molluscs (2)

Part III, 3.2.2

Housing and husbandry practices

- Organic bivalve mollusc production shall take place within areas delimited by posts, floats or other clear markers and shall, where appropriate, be restrained by net bags, cages or other man made means;
- Organic shellfish farms shall minimise risks to species of conservation interest. If predator nets are used, their design shall not permit diving birds to be harmed.

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B: Organic Aquaculture

Part III: Hatchery management

→ Only FEW SPECIFIC REQUIREMENTS FOR HATCHERIES are defined.
The general aquaculture requirements apply.

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Hatchery management - Broodstock

Part III, 3.1.2.1: **Non-organic broodstock may be used** (if organic broodstock not available)
Such animals shall be kept under organic management for at least three months before they may be used for breeding.

3.1.6.2: Broodstock shall be handled in a manner to **minimize physical damage and stress** and under anaesthesia where appropriate. Grading operations shall be kept to a minimum and as required to ensure fish welfare.

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Hatchery management - Feed

Basically, same requirements as for grow-out feeds, with following exceptions:

- The **protein limits** for feed according to 3.1.3.4. do not apply for juveniles!

- In the larval rearing of organic juveniles, **conventional phytoplankton and zooplankton** may be used as feed.

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Hatchery management - Cleaning and disinfection

Basically, same requirements as for grow-out

→ Refer to Annex VII, Section 2 of Reg 889/2008.

Ultraviolet light and ozone may be used only in hatcheries and nurseries

Treatment of ova (prior to hatching)

-The treatment of ova prior to hatching with **iodine** based treatments is permitted once per production cycle and does not have to be considered as a prescribed allopathic treatment

-Treatment of ova prior to hatching with **Formalin** is prohibited

Treatment of broodstock and live animals

Any treatment of broodstock and live animals has to be considered as allopathic medical treatment (e.g. treatment of live animals with Formalin)

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Hatchery management - Reproduction

Part III, 3.1.2.2:

- The use of **hormones and hormone derivates** is **prohibited**.

- Artificial induction of **polyploidy**, artificial hybridisation, cloning and production of monosex strains, except by hand sorting, **shall not be used**;

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Hatchery management - Stocking densities

Hatchery stocking densities are not (yet) defined by EU Regulation

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Annex: Glossary (1)

- **Recirculating aquaculture system**: a facility on land or in a vessel where aquaculture takes place within an enclosed environment involving the recirculation of water and which depends on permanent external energy input to stabilise the environment for the aquaculture animals.
- **Aquaponic**: food production system that couples aquaculture (raising aquatic animals such as fish, crayfish, snails or prawns in tanks) with the hydroponics (cultivating plants in water) whereby the nutrient-rich aquaculture water is fed to hydroponically-grown plants, where nitrifying bacteria convert ammonia into nitrates.
- **Hatchery**: a place for the breeding, hatching and rearing through the early life stages of aquaculture animals, in particular finfish and shellfish.
- **Nursery**: a place where an intermediate aquaculture production system is applied between the hatchery and grow-out stages. The nursery stage is completed within the first third of the production cycle, with the exception of species undergoing a smoltification process.
- **Effluent**: an outflowing of water to a natural body of water, from a structure such as a sewage treatment plant, fish pond or industrial outfall. Nutrient rich effluents can contribute to eutrophication of the surrounding water bodies.
- **Eutrophication**: Eutrophication is the process by which an entire body of water, or parts of it, becomes progressively enriched with minerals and nutrients, particularly nitrogen and phosphorus. It has also been defined as "nutrient-induced increase in phytoplankton productivity".

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Annex: Glossary (2)

- **Stocking density**: number of animals raised on a defined area
- **Conversion period**: the transition from non-organic to organic production within a given period, during which the provisions of the Regulation concerning organic production apply
- **Veterinary treatment**: all courses of a curative or preventive treatment against an occurrence of a specific disease.
- **Allopathic medicine**: science-based, modern medicine.
- **Ectoparasite**: parasitic organisms that live primarily on the surface of the host
- **Bio-fouling**: the accumulation of microorganisms, plants, algae, or small animals where it is not wanted on surfaces such as ship, net cages, devices such as water inlets, pipework, grates, ponds, and rivers that cause degradation to the primary purpose of that item (e.g. the inhibition of water-flow in net cages)
- **Anti-fouling agent**: a substance which prevents or retards fouling or marine underwater growth certain surfaces (e.g. net cages)
- **Broodstock**: a group of mature individuals used in aquaculture for breeding purposes.
- **Polyploidy**: a condition in which the cells of an organism have more than one pair of (homologous) chromosomes.
- **Hybridization**: the process of combining different varieties of organisms to create a hybrid

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EC (2004) Regulation (EC) N° 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules

EC (2006a) Council Directive 2006/88/EC with amendments on animal health requirements for aquaculture animals, and on the prevention and control of certain diseases

EC (2006b) Council Regulation (EC) N° 1991/2006 of 21 December 2006 amending Regulation (EEC) N° 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs

… Full References List LINK

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Linkography

The organic control system

https://ec.europa.eu/agriculture/organic/consumer-trust/certification-and-confidence/controls-and-inspections/control-system_en

Food Safety

https://ec.europa.eu/food/safety/official_controls/legislation_en

Intelligent Fish feeding through Integration of ENabling technologies and Circular principle

http://ifishienci.eu/wp-content/uploads/2022/05/Attachment_0-4.pdf

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Enjoy the module!

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