Deliverable D6.3

POLICY IMPLEMENTATION PLAN

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Responsible for Deliverable: Giuseppe Lembo, COISPA

By:
Giuseppe Lembo, Maria Teresa Spedicato, Maria Teresa Facchini, Isabella Bitetto, Walter Zupa, Pierluigi Carbonara, COISPA. Antonio Compagnoni, ICEA. Lizzie Melby Jespersen, ICROF. Emanuele Busacca, IFOAM EU.

European Commission
FP7-KBBE. 2013.1.2-11 Assessment of organic aquaculture for further development of European regulatory framework **(Grant No: 613547)** **www.oraqua.eu**

SUMMARY

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THE EUROPEAN ORGANIC FARMING CONTROL & CERTIFICATION SYSTEM

Background

The first European regulation on organic farming (Reg. n° 2092/91) was adopted in 1991. It provided a legal definition of organic farming, production rules for organic plant production and defined control and labelling requirements in order to protect consumers and organic farmers against misleading organic claims. In 1999 this regulation was amended by Regulation (EEC) No 1804/1999 setting up rules for livestock production and prohibition of GMO. In June 2004 the Commission launched the European Action Plan for Organic Food and Farming [COM(2004)415 final], with which the Commission intended to assess the situation and lay down the basis for policy development, thereby providing an overall strategic vision for the contribution of organic farming to the Common Agricultural Policy. One of the recommendations in the action plan was to improve and reinforce the community's organic farming standards, among other things by completing the standards for areas not yet covered, such as aquaculture. This led to the revision of the organic regulation and adoption of a new Council Regulation (EC) n° 834/2007 on organic production and labelling of organic products and repealing regulation (EEC) n° 2092/91. In 2008 the Council regulation was supplemented by the Commission Regulations (EC) n° 889/2008 and n° 1235/2008 laying down detailed rules for the implementation of Council Regulation (EC) n° 834/2007. Finally, in 2009 the organic aquaculture rules were introduced by the adoption of the Commission Regulation (EC) n° 710/2009 laying down detailed rules on organic aquaculture animal and seaweed production. The new organic aquaculture regulation came into force on January 2010.

With the Commission Decision of 3 June 2009 (2009/427/EC) the European Commission established an independent Expert Group for Technical Advice on Organic Production (EGTOP) to assist the Commission by providing technical advice as regards evaluation of products, substances and techniques which can be used in organic production, improving existing rules or developing new production rules and enhancing exchange of experience and good practices in the field of organic production. The group delivers independent expert advice, based on mandates from the Commission which, in turn, are based on requests forwarded to the Commission by the Member States. Until now EGTOP has drafted reports based on three mandates on organic aquaculture http://ec.europa.eu/agriculture/organic/eu-policy/expert-advice/documents/final-reports_en. These have been dealing with the use of non-organic juveniles, permitted feed and feed additives (Aquaculture report A in 2013); stocking density, recirculation aquaculture systems, reproduction of shrimps, use of hormones, rules for production of juveniles and their feed, evaluation of substances for cleaning and disinfection (Aquaculture report B in 2014); dietary requirements of early life stages of shrimps and rules for production of zooplankton (Aquaculture report C in 2016).

The EU Member States are not allowed to apply stricter national regulation (specifically for the organic sector) than the rules set out in the EU organic regulation, but they are allowed to develop and apply national regulation in fields not (yet) covered by the EU organic regulation, e.g. processing, catering, climate change mitigation or social aspects, as long as such requirements do not violate general EU regulation within these areas. Private national or international organic standards can be applied in the EU Member States besides the EU organic regulation. The private standards are usually owned by organic producer organizations, (e.g. Bioland or Naturland in Germany, KRAV in Sweden, Soil Association in the UK or Demeter worldwide). As a minimum, the private organic standards shall fulfil the EU organic regulation but, contrary to the national regulations, the private standards may apply extra, as well as stricter rules than the EU organic regulation, also within fields that the EU organic regulation already covers. This means that organic aquaculture farmers may need to be certified not

only according to the EU organic regulation but also to one or more private organic standards, depending on the market requirements.

Some private standards/logo owners (e.g. Naturland and Soil Association) maintain the final certification decision, and hereby the use of their logo, although they generally outsource the inspection to several accredited control bodies. The inspectors of the control bodies are trained by the private standards/logo owner concerning the extra requirements of the private standards to be controlled. Other private standards/logos owners (e.g. Krav and BioSuisse) delegate both inspection and certification to the accredited control bodies, maintaining just a sort of guidance over interpretation of the standards implementation.

For some years, most of the private organic standards owners and some private organic certifiers in Europe have been collaborating within the framework of LOA (Leading Organic Alliance), in partnership with IFOAM Organics International Best Practice Community, on establishing equivalence processes and developing common standards, especially in non-regulated areas, such as social responsibility, packaging etc. Current members of this initiative are: BioAustria (AU), BioForum (BE), Bioland (DE), BioSuisse (CH), Debio (NO), Ecovalia (ES), Eko (NL), Icea (IT), Krav (SE), Naturland (DE) and Soil Association (UK). As regards the aquaculture standards most of the European private standards and logo owners are now converging their standards towards the EU organic regulation (apart from Naturland).

It is worth to mention that the current status of the EU Organic Regulation is an ongoing process of review, which was started by the Commission in late 2011 with a proposal for a new organic regulation that, following the recently implemented Lisbon Treaty rules, needs to be agreed by the so-called Trilogue (Parliament, Council and Commission).

Organic farming: Control and certification systems in the EU

The certification and control system in the European regulation on organic farming, including organic aquaculture, is quite complicated and differs between Member States, which may apply one of the following three types of certification systems:

A. System of private approved inspection bodies.
B. System of (a) designated public inspection authority(ies).
C. Mixed system with designated public inspection authority(ies) and approved private inspection bodies.

At national level the certification system consists of the following actors: competent authority(ies), accreditation body(ies), control authority(ies), private control body(ies) and private standards owner(s) (see Fig. 1).

In 2015, among the 28 Member State, 19 countries were applying the system A, 6 countries (i.e. Denmark, Estonia, Finland, Lithuania, Malta and the Netherlands) were applying the system B and 3 countries (i.e. Luxembourg, Portugal and Spain) were applying the system C. The number of private certification bodies in each country was ranging from 2 (Cyprus, Latvia and Slovakia) up to more than 10 (Bulgaria, Germany, Greece, Italy, Portugal, Romania and Spain). At the EU level the organic certification system is supervised by the European Commission and at the Member State level by the national or regional authorities.

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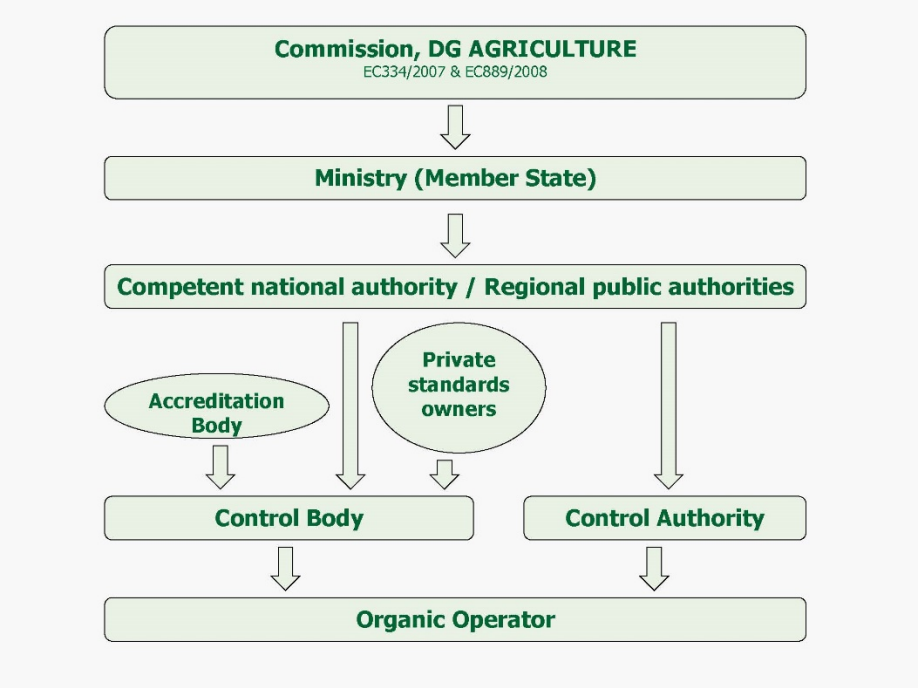

Fig. 1: Overview of actors involved in the organic certification chain (Jespersen, 2011)

The supervision of the organic certification system depends on the national/federal government or on the regional/provincial governments (e.g. Germany and Italy). All private control bodies need to be approved by the national or regional competent authorities. They also need to be accredited by the national accreditation authority, in accordance with ISO/IEC standard 17065:2012 Conformity assessment – Requirements for bodies certifying products, processes and services. According to Reg. (EC) n° 834/2007, public control authorities do not need such an accreditation.

This complex certification and control system may have had a negative impact on the free exchange of organic products in Europe. Furthermore, the related accreditation and certification costs may be quite expensive, especially where the market requires certification according to one or more private standards in addition to the EU organic regulation certification. There are no figures available on the cost of certification of organic aquaculture in the EU member states, but according to a case study carried out in 2010, in the framework of the CERTCOST project, the hourly rate for control of organic farms varied between € 8/h in the Czech Republic and € 133/h in Germany (Jespersen, 2011). In the case of organic aquaculture, with small numbers of operators and a high demand of specialisation of the organic inspectors, the cost of control and certification is most probably higher than the average of other organic production systems.

Import from Third Countries

Organic imports from third countries represent an important part of organic products consumed in most EU member states. This is true also for organic aquaculture products.

Before 2006, according to the previous import regulation, organic products could be imported from a limited list of Equivalent Third Countries. The "equivalent" status could be attributed to those countries whose organic production systems comply with the principles and production rules set out in the EU organic regulation and whose control measures are of equivalent effectiveness to those laid down in the EU organic regulation. Organic food products could also be imported on the basis of import authorisations released, by the Member State competent authority, according to procedures and

timing unequal between the various EU Member States, thus creating uneven import conditions. In fact most organic food products were imported based on such import authorisations.

In 2006 the import regime was changed to simplify procedures by the adoption of Council Regulation (EC) n° 1991/2006. The import certificates issued by the competent authorities in the Member States should gradually be phased out and the new import system was based on the establishment of a Third Countries List with equivalent production and inspection procedures, as well as a list of inspection bodies and authorities competent to carry out inspections and issue certificates in third countries.

With the Council Regulation (EC) n° 834/2007 and the Commission Regulation (EC) n° 1235/2008, the framework conditions for imports into the EU have changed considerably. The present import system keeps the Third Countries List as a major part of the system, and the list now includes products categories from 12 approved countries: Argentina, Australia, Canada, Costa Rica, India, Israel, Japan, New Zealand, Republic of Korea, Switzerland, Tunisia, the United States of America. However, the import authorisations by the Member States is replaced by two lists with approved control bodies operating in third countries (see Commission Regulation (EU) n° 508/2012).

Currently, the following two options are provided by the regulation to import organic products from third countries to EU:

1. The EU Regulation on Organic Agriculture is applied in the Third Countries exactly as in the EU member states, i.e. the products are "compliant" with Council Regulation (EC) n° 834/2007 and Commission Regulation (EC) n° 889/2008. The European Commission will establish a list of recognised "compliant" control bodies authorised to carry out inspections and issue certificates in third countries.
2. The production standards and control measures in the Third Countries are "equivalent" to Council Regulation (EC) n° 834/2007 and Commission Regulation (EC) n° 889/2008.
   In this case, the EU recognises imports as equivalent if:
   a) the third country in question has been included in the European Commission's list of recognised third countries (Council Regulation (EC) n° 834/2007, art. 33.2), or
   b) the control body issuing the certificate is listed by the European Commission as an "equivalent" control body (Council Regulation (EC) n° 834/2007, art. 33.3).

The option n° 1, based on the "compliant" concept, has not yet been implemented by the EU Commission. While the option n° 2, based on the "equivalent" concept has been implemented and is currently widely used. However, it is worth to mention that in the on-going process of revision of the EU organic regulation the imports system is the subject of a discussion, whose outcome could lead to the modification of the current situation.

The EU Organic Control System: some critical points

The organic aquaculture sector is the most recent organic production system to be regulated in the EU and its development since 2010, when the EU regulation on aquaculture went into force, has been rather limited by its small numbers of certified operators, market actors and volumes. Therefore, the organic aquaculture sector seems to be more sensitive to the burdens and inefficiencies of the control system than the other organic production sectors.

Based on the stakeholder feedbacks and the relevant literature reviewed, five critical issues are addressed hereinafter.

Harmonise supervision of the certification system, approval of control bodies and data collection

Different terms and definitions used in the EU organic regulation, as well as types of non-compliances and appropriate sanctions to be given at different levels of non-compliances are needed at the EU level

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to harmonise interpretation of the EU organic legislation and the control system. Such harmonisation should be viewed as a process to be continuously carried out.

Further it is recommended to publish annual supervision reports at the EU level based on a harmonised data collection system that allows comparison of the implementation of the organic regulation and control system in all EU Member states. This would allow more transparency in the organic regulation implementation and control system in the EU. Also an increased number of audits in EU Member States, as well as in Third Countries, and the overview audit reports might contribute to enhance transparency.

Although the private control bodies need to be accredited according to ISO/IEC 17065:2012 (ISO, 2012), it would be appropriate to harmonise the implementation of the requirements and procedures for approval of control bodies, as well as the system for monitoring and supervision of control bodies in the EU Member states. Drawing up codes of Good Practice could improve this situation.

Further development of the use of risk based inspection systems

A further development of the risk based inspection systems, by supporting a weighted approach to the risk of occurrence of non-compliances, in relation to the impact severity on the market and on consumer trust, would be highly recommendable, as well as the harmonization at the European level. Although an annual physical inspection of all producers is recommended, for the sake of consumer confidence (with some exemption: e.g. retailers selling exclusively pre-packaged organic products might be exempted from control), operators with a low risk profile should be less frequently inspected physically, while higher risk operators will be more closely targeted.

Strengthen the institutional basis of the organic farming certification system at different levels

Although the three different control and certification systems (i.e. private control bodies, public control authorities and a mixture of both) are somewhat a complicated arrangement, moving toward a regulation on official control activities in food and feed (mainly dealing with food safety) would also turn in a product oriented, instead of process oriented, the organic farming regulation.

Collaborations and responsibilities between the units of the DGs of the EU Commission involved in the administration of the organic certification system might be further improved. Likewise it would also be relevant to involve stakeholders more directly (e.g. by providing a platform for knowledge exchange between control bodies, other stakeholders and competent authorities).

Increase transparency and information provision to organic operators

In order to increase the transparency and enhance the information provision on control requirements to organic operators, the implementation of web tutorials in national languages on the EU website for organic production would be beneficial.

Also the control bodies should increase their transparency by publishing the price lists for their services on their web site in a way that makes comparison of fees possible for the operators.

Invest in the organic control and certification knowledge system

It seems appropriate to further invest in the knowledge of the organic certification system, providing European forums for regular and structured information exchange on implementation issues between stakeholders, as well as training opportunities targeted to the various actors dealing with the implementation of the organic certification system. It would be also appropriate to introduce a minimum training level for organic inspectors, preferably independently from the control bodies they are working for.

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References

Dabbert S. (2012): Improving the organic certification system. How to increase the effectiveness and efficiency of organic certification. Recommendations form the CERTCOST project (www.CERTCOST.org)

ISO (2012) ISO/IEC 17065:2012. Conformity assessment – Requirements for bodies certifying products, processes and services.

Jespersen, L.M. (2011): Organic certification in selected European countries: Control fees and size of the sector. Certcost Deliverable 8.

Ingrid Kvalvik, Otto Andreassen, Nofima (2015): The institutional framework for organic aquaculture – critical development constraints and the potential for improvement. OrAqua Deliverable D3.3.

Sanders, J. (2013) Evaluation of the EU legislation on organic farming (ed.) Thünen Institute of Farm Economics, Braunschweig.

IFOAM AQUACULTURE FORUM RECOMMENDATIONS TO ORAQUA ON THE REVISION OF EU REGULATION 889/2008 IN RELATION TO AQUACULTURE

November 2016

The IFOAM Aquaculture Forum (the Forum) is a forum for stakeholders from the global organic aquaculture sector – standard setters, certification bodies, researchers and producers, feed manufacturers – to discuss standards and regulation related to organic aquaculture and to advise IFOAM on related issues. The Forum has agreed to submit the following recommendations on the revision of EU Regulation 889/2008 to the OrAqua project.

1.0 Juveniles

1.1 Recommendation:

The Forum agrees with the IFOAM EU position to allow the use of non-organic juveniles when organic juveniles are not available. At least the latter two-thirds of the life of non-organic juveniles must be under organic management.

1.2 Recommendations:

1.2.1 The granting of exceptional permissions to use non-organic juveniles should be centralised, preferably with an EU database of available hatchery capacity. This will ensure that any permissions are granted with full knowledge of available juveniles or hatchery capacity available to produce juveniles.

1.2.2 It is necessary to formulate production requirements for organic juvenile production from hatchery through to the grow-out stage.

1.2.3. Centralised database is needed for organic juvenile availability. Operators must use the database if the species they require is listed.

2.0 Feed

2.1 Clarification:

The Forum clarifies that Article 25k of 889/2008 is not an order of priority but a list of priorities.

2.2 Recommendation:

Trimmings from non-organic aquaculture should be permitted. Article 25k paragraph 2. Should be reinstated and amended as follows (underlined).

EC 889/2008 Article 25k

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Specific rules on feeds for carnivorous aquaculture animals

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

(a) organic feed products of aquaculture origin;

(b) fish meal and fish oil from organic aquaculture trimmings;

(c) fish meal and fish oil and ingredients of fish origin derived from trimmings of fish already caught for human consumption in sustainable fisheries;

(d) organic feed materials of plant or animal origin;

(e) feed products derived from whole fish caught in fisheries certified as sustainable under a scheme recognised by the competent authority in line with the principles laid down in Regulation (EU) No 1380/2013 of the European Parliament and of the Council.

2. If feed mentioned under paragraph 1 is not available, the following types of fishmeal may be included: fishmeal and fish oil derived from non-organic aquaculture trimmings (only in situations of unavoidable mixing). Such feed material shall not exceed 30% of the daily ration~~.~~

3. *The feed ration may comprise a maximum of 60 % organic plant products.*

4. *Astaxanthin derived primarily from organic sources, such as organic crustacean shells may be used in the feed ration for salmon and trout within the limit of their physiological needs. If organic sources are not available natural sources of astaxanthin (such as Phaffia yeast) may be used.*

5. *Histidine produced through fermentation may be used in the feed ration for salmonid fish when the feed sources listed in paragraph 1 do not provide a sufficient amount of histidine to meet the dietary needs of the fish and prevent the formation of cataracts.*

2.3 Recommendations:

2.3.1 The Forum recommends species-specific and system-specific allowances for percentage inclusion of supplementary feeds, particularly fishmeal and fish oil.

2.3.2 The approach to supplementary feeding must differ between species farmed in area-based aquaculture systems (e.g. ponds, lagoons), which rely on a level of naturally-derived feed, and in open marine systems that rely primarily on feed provided by the operator.

3.0 Micro-algae

Recommendation:

The Forum considers it is important to have specific rules for micro-algae for human food. Including them in the seaweed rules is not technically appropriate. The provisions for micro-algae for food need to include requirements for substrates, cultivation methods, inputs and types of system.

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4.0 Live plankton feed in hatcheries

Recommendation:

The Forum considers that it is important to have specific requirements for organic live plankton feed for hatcheries. This will increase the integrity of production of organic juveniles.

5.0 Simultaneous production of organic and non-organic aquaculture animals

Recommendation:

The Forum recommends to continue to allow simultaneous production of organic and non-organic aquaculture animals (rearing and grow-out) on the same holding with the requirements for separation in EU regulation 889/2008 Art 6b 2. Different production phases and different handling periods of the aquaculture animals must be involved. This provision allows operators to try organic production, build up knowledge and experience and expand organic production when appropriate.

6.0 Systems and stocking densities

Recommendation:

The Forum recommends keeping stocking density requirements for species contained within the annexes and not to move them to the basic text. This will allow emerging best practice to more easily be incorporated into the rules in the future.

7.0 Recirculation systems

Recommendation:

The Forum recommends continuing to allow recirculation systems for hatcheries and nurseries and recognises that recirculation systems may in future be designed to fit with organic principles through the re-use of water (partially open systems), careful management of the production environment and animal welfare, reduction in energy use and waste.

8.0 SLAUGHTER

Recommendation:

The Forum supports the requirement to use the most humane stunning methods available in each situation. In particular, for warm water species where ice is used in the slaughter process, we recommend that ice slurry is used as this lowers the core temperature of the fish quicker than ice blocks.

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9.0 CLEANER FISH

Recommendation:

The Forum considers that the welfare of species used as cleaner fish is just as important as the species farmed for consumption.

10.0 NEW SPECIES

Recommendation:

The Forum sees a need for clarity about the process for developing requirements for new species, especially for third countries. For species that are not included in the scope national rules apply. Yet where these do not exist there must be flexibility to allow responsible certification of them *mutandis mutatis*.

11.0 HORMONES

Recommendation:

The Forum agrees to continue to prohibit the use of hormones and hormone derivatives in organic aquaculture EC Regulation 889/2008 Art. 25i.

12.0 INNOVATION

Recommendation:

The Forum considers it essential that the structure of the regulation enables the sector to react to innovation. Production rules need flexibility to incorporate innovations and technological advances, so they must be specified in delegated acts.

13.0 HARMONISATION OF CONTROLS

Recommendation:

The Forum considers that the further harmonisation of controls amongst Member States and certification bodies is essential. This must be a priority, including rationalisation of interpretations and agreement on implementation and risk assessment.

14.0 CONSUMER COMMUNICATION STRATEGY

Recommendation:

The Forum supports the concept of a consumer communications strategy to increase awareness of organic aquaculture.

15.0 OPERATING IN THIRD COUNTRIES

Recommendation:

Many of the species covered by the EU organic aquaculture rules are only produced in Third Countries. This means that the import regime is of particular importance to aquaculture products.

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Where the regulation refers to decisions or authorisations that require the involvement of the 'competent authority' it is essential to have a clear and consistent approach as to how these requirements are to be fulfilled in Third Countries.

These recommendations were agreed by the Forum, and documented by Isabel Griffiths, Coordinator. For further information please contact info@aquaculture.ifoam.bio

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FEDERATION OF EUROPEAN AQUACULTURE PRODUCERS

Liege, 21 November 2016

CONCERNS: ORIGIN AND MANAGEMENT OF NON-ORGANIC AQUACULTURE ANIMALS

This correspondence is addressed for the attention of the Committee on Organic Production and signifies the views of the Federation of European Aquaculture Producers (www.feap.info) that represents the European Fish farming profession.

BACKGROUND

Regulation 710/2009, amending Regulation (EC) No 889/2008, set out detailed rules for the implementation of
Council Regulation (EC) No 834/2007 on organic aquaculture animal and seaweed production.
Professional European fish farmers wishing to produce organic produce and that had used previously-adopted nationallyaccepted rules, prior to 1st January 2009, were allowed to continue using such rules until 1st July 2013. This latter date was changed to 1st January 2015 under Regulation 1030/2013.

It is thus that since 1st January 2015, all farmed organic fish have been produced under the common EU standard rules.

One of the rules that has been a key point for discussion is Article 25e on the origin and management of nonorganic aquaculture animals, where the original text (Regulation 710/2009) states:

1. For breeding purposes or for improving genetic stock and when organic aquaculture animals are not available, wild caught or non-organic aquaculture animals may be brought into a holding. Such animals shall be kept under organic management for at least three months before they may be used for breeding.
2. For on-growing purposes and when organic aquaculture juvenile animals are not available non-organic aquaculture juveniles may be brought into a holding. At least the latter two thirds of the duration of the production cycle shall be managed under organic management.
   The maximum percentage of non-organic aquaculture juveniles introduced to the farm shall be: 80 % by 31 December 2011, 50 % by 31 December 2013 and 0 % by 31 December 2015.

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This text clearly indicates that a need was identified for organic juvenile fish from 2012 and that demand should grow, leading to a capacity for full supply by 1st January 2016.

> In response to this, investments were made for some farmed fish species (notably in Denmark for rainbow trout) in farms specialising in organic juvenile supply. However, the subsequent changes in dates for adaptation to the new rules meant that these farms have faced significant alterations to the market demand for their juvenile fish.

This situation has been further complicated by the Implementing Regulation 673 of 2016 which laid down a further change in date:

> (2) in Article 25e, paragraph 3 is replaced by the following: '3. The maximum percentage of nonorganic aquaculture juveniles introduced to the farm shall be 80 % by 31 December 2011, 50 % by 31 December 2014 and 0 % by 31 December 2016.'

The result of this position is that some farms that have invested in organic juvenile supply – following the original rules of Regulation 710/2009 – have either stopped production or are reconsidering their direction.

Taken in its full perspective, the supply of organic eggs and/or organic juveniles, for ongrowing in certified organic farms, is a fragile activity and this observation applies to the full range of fish species produced in European aquaculture.

The conclusion of the FEAP is that maintaining a target of 100% demand – as anticipated in Regulation 710/2009 – is too ambitious and currently unrealistic.

In order to maintain and further organic aquaculture fish production in Europe, the FEAP therefore provides its support to the position put forward by the IFOAM (International Federation of Organic Agriculture Movements), which is:

- **Organic juveniles should be used when available**
- **At least the latter two thirds of the duration of the production cycle shall be managed under organic management**
- **Support the *creation of a database on the availability of organic juveniles and of the organic aquaculture species grown in each country, comparable to the seed database stressing the transparency of the use of non-organic juveniles should be ensured in such a database. (According to IFOAM EU, production capacity on existing juvenile farms should also become part of the database, as juveniles are only produced on request).***

The FEAP understands that the European Commission is aware of this position, following a communication sent by IFOAM (19th November 2015) [attached].

This approach to organic fish production and the linked supply of organic juveniles is in line with the advice of EGTOP (Expert Group for Technical Advice on Organic Production) and also the provisional recommendations of the European ORAQUA project (Multi-stakeholder inputs) [attached].

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While understanding the complexities of modifying European Regulations, the FEAP believes that maintaining the date of 1st January 2017 for implementing 100% demand of organic juveniles will have the knock-on effect of reducing organic juvenile supply, negatively affecting farmed organic production.

It is the wish of the FEAP that the profession, the organic movement and the administrative authorities agree on this position since clarity is required for the purpose of reassuring the investment and operation of both organic juvenile and ongrowing production.

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ARGUMENTATIVE NOTE ON THE POSITIVE EVOLUTIONS OF REQUIREMENTS SPECIFICATIONS CONCERNING ORGANIC OYSTERS

Contribution to ORAQUA program

1 October 2016

Oyster Farmers Association to Promote Oysters Born at Sea
President: Benoit LEJOUBIOUX
Pencadenic - 58 rue de Béguero- 56 370 LE TOUR DU PARC (France)
Tél: +33 (0)6.11.75.73.28 - e-mail: lejbx@orange.fr
www.ostreiculteurtraditionnel.fr

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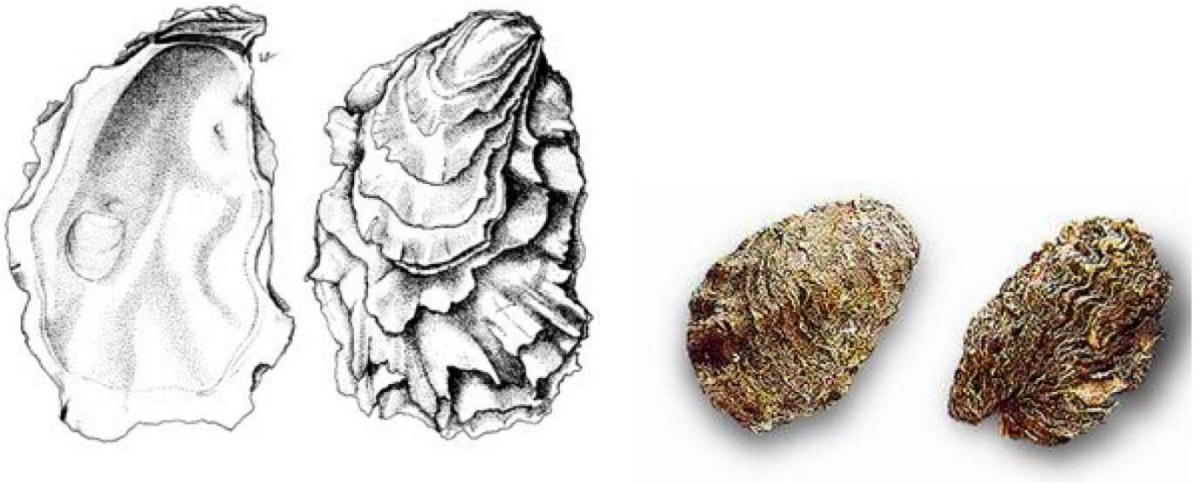
This notice is proposed by the Oyster Farmers Association to Promote Oysters Born at Sea **to fuel the reflections and proposals of the European OrAqua Program's coordinators with a view to propose modifications to the EC Committee regulations, No 710/2009**, (correcting the EC regulations No 889/2008 listing implementing modalities of EC regulations No 834/2007 issued by the European Council regarding the organic production of animal and seaweed aquaculture) **and more particularly article number 25o**.

I. HISTORY OF THE CUPPED PACIFIC OYSTER *CRASSOSTREA GIGAS* IN EUROPE

Sources: FAO, 2007-2016; Department of fishing and aquaculture / FAO info sheets in Fishing and Aquaculture Department (on line), Rome, updated on May 22nd 2013

Crassostrea gigas

Names: En - Pacific cupped oyster, Fr - Huître creuse du Pacifique, Es - Ostión japonés



• BIOLOGICAL CHARACTERISTICS

Strong shell with unequal valves, extremely rugged, very fluted and laminated. Left bottom valve, deeply hollow, its sides sometimes almost vertical.

The upper right shell is flat or slightly convex, resting on the inside of the lower shell. Its sides are unequal. The hinge and umbo often covered over. Oblong in contours but often distorted and very irregular. The shape of the shell varies according to habitat. The color, often whitish, with a number of striations and purple dots extending far from the umbo.

The inside of the shell is white with an adductor muscle which may be dark but never purple nor black.

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- **HISTORICAL CONTEXT**

Because of its rapid growth and its great tolerance to diverse environmental conditions, *Crassostrea gigas* has become prime choice for culture in several parts of the world. While originating in Japan, where it has been grown for centuries, it was repeatedly introduced mostly on the West Coast of the USA in the 1920s and in France in 1966 to replace the stock of indigenous oysters, exhausted by overexploitation or diseases or else to start new oyster businesses where there were none before.

- **HABITAT AND BIOLOGY**

Crassostrea gigas is one several estuary species, choosing the lower layers of solid substrates and lives sedentarily, attached to rocks, debris and shells in the intertidal zone inferior to 40 meters. However, it can also be found in muddy sea-beds or a mixture of mud and sand.

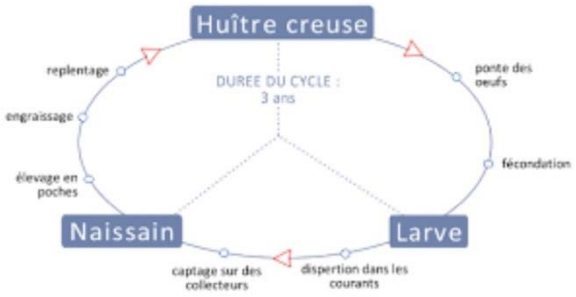
Although the optimum salinity level required is comprised between 20-25‰, reproduction can occur below 10‰. Crassostrea gigas can survive in salinity levels higher than 35‰, yet with an utterly low rate of reproduction and can take a large spectrum of temperatures comprised between 18° and 35° C.

Gametogenesis starts at around 10°C with a 15‰ to 35‰ salinity, rarely above. Spawning usually occurs at temperatures above 20 °C, more rarely between 15 and 18°C.

The species is very fertile: a female measuring 8 to 15 cm in length can produce between 50 to 200 million eggs in a single egg deposition.

The larvae are planktonic and dispersed throughout the water column. Their shells are 70 µm at prodissoconch 1 stage, following an initial embryonic stage. When they reach 70 µm, they rush into the water column and crawl using their larval foot until they find an appropriate point of attachment. The operation can last 2 to 3 weeks, depending on water temperature, salinity level and food availability.

In that period of time, they are likely to be dispersed by water currents. As is the case for other species, the mature larvae of Crassostrea gigas will settle on a suitable substrate by way of a tiny pool of cement excreted by a gland located near the foot. They have now turned turn into juveniles. In a natural habitat, they grow very fast and reach market-size after 18 to 36 months.



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- **PRODUCTION SYSTEMS**

Oyster farmers choose different methods of production for cupped oysters, depending on the source of the larvae, the environmental conditions in the different regions and the type of product to be put on the market. *Supplying juveniles*

a) Oysters of natural origin

In the areas where the stock of wild spat is abundant and reliable, oyster farmers install spat collectors in sea waters to guarantee their own supplies and can do without hatcheries. **A large part of the spat world supply comes from the capture of wild spat**, using a large variety of spat collecting contraptions.

At this stage, we would like to underline that, unlike for other aquaculture species**, a reliable supply of wild spat is in no way an impediment to developing organic oyster production in the future**. Wild spat is easily available by capture in its natural environment. It is therefore of natural origin. The difference lies in the oyster farmers' know-how.

b) Oysters born in hatcheries

As we shall see below**, the production of juveniles by hatcheries requires a much more complex technique implying a lot of human manipulations and therefore has nothing natural about it**.

The stock of genitors intended for reproduction is often obtained from commercial breeding units and is the result of a selection process. As it is impossible to determine the sex of adult oysters, batches of adult oysters are taken in winter at regular intervals and kept in separate, open flow basins supplied with sea water and seaweed cultivated at 22°C, with a salinity level varying between 25‰ to 35‰. During the winter, while adults are not yet sexually mature, they will spend six weeks of conditioning in hatcheries until gametogenesis can start and gametes reach maturation. En avançant dans la saison, la température ambiante de la mer augmente et la période de conditionnement nécessaire devient donc plus courte. Advancing in the season, the ambient sea temperature increases and the necessary conditioning period becomes shorter. Adult oysters with mature gametes can spawn after a thermal shock. Most often, they are opened and their gametes obtained by gonad laceration using Pasteur pipettes, a method which gives good results. Mature females, with a live weight of 70 to 100 grams give 50 to 80 million eggs. The eggs of six or so females are fertilized by small quantities of sperm from the same number of males. The processing from fertilized eggs to the stage of prodissonch 1 (D larva) *i.e*. entirely coated with shell takes place in large basins filled with sea water finely filtered and often treated by UV rays at a temperature of 25 to 28°C and a salinity level of 25 to 32‰. The basins are not ventilated and no food is added during the first stage of development, which approximately takes 24 hours.

Today, most hatcheries focus on the production of triploids while maintaining the production of diploid seeds. After cytochalasine B blocking the expulsion of polar body shortly after fertilization

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was banned, genetic manipulation provides the crossing of tetraploid individuals with diploid. Tetraploids oysters are themselves the result of genetic manipulation.

In the case of hatcheries intending to supply the organic oyster sector, they can do so with diploids only, under the current European regulations.

Grow out techniques

The breeding part is entirely done in the sea. A variety of culture methods, grounded, elevated or suspended are used depending on the environment, (for example, tidal range, the depth of sea water on oyster tenures, the water exchange rate in the sills and narrows of bays and estuaries, the nature of substrates, etc.) and local traditions. Oysters grow fast at 15-25°C and a salinity level between 25 and 32‰. It also depends on the supply in natural phytoplankton. *Crassostrea gigas* will reach market size from the ages of 18 to 36, with a live weight of 70 to 100 grams, including the shell.

Extensive oyster farming operations in rented zones reaching thousands of hectares, covering all the aspects of production from spat collection, grow-out and hardening phases until harvest time can yield up to 25 tons per ha and per year.

Spat is placed in mesh nets or perforated plastic trays of different types attached by ropes or rubber bands to a wooden frame or to tables built from metal bars resting on suitable sea beds in the right intertidal zone.

Off-bottom farming can be used as a way to grow out the oysters to market size. Spat measuring 10 to 15 mm can be loaded in bags at a rate of 1,000 to 2,000 per 0,25 to 0,5 m2, which requires regular maintenance. They are then placed in lower densities and the size of the bag meshing gets bigger during their growth. The growth rate slows down considerably when the oysters' biomass exceeds the cage surface by 5 kilos/m2 in the most productive zones.

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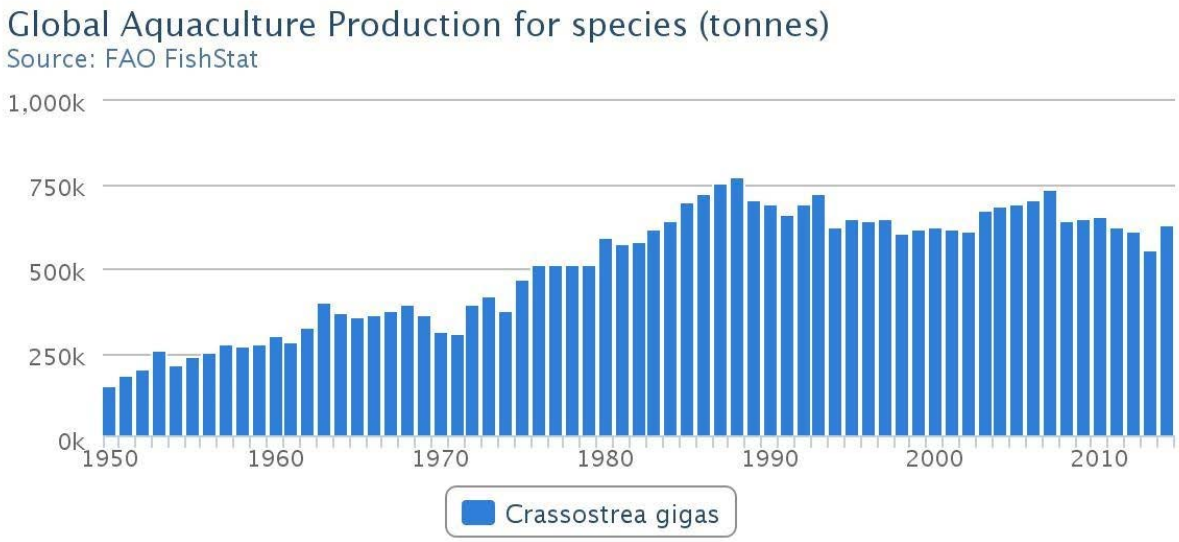
Harvesting techniques

Oysters are usually harvested when their shell is superior to 75 mm with a live weight of 70-100 + grams. Harvesting bottom grown oysters is done by raking and handpicking or by dredging when the oyster beds are under water. Marketable oysters grown by various techniques suspended or in elevated bags are harvested by small boats or self-propelled barges, to be worked in the establishment on land.

II. CURRENT ASSESSMENT OF THE OYSTER SECTOR AND MORE SPECIFICALLY OF THE ORGANIC OYSTER SECTOR (TECHNICAL, COMMERCIAL AND ECONOMIC REALITIES)

• STATISTICS ON THE WORLD PRODUCTION OF *CRASSOSTREA GIGAS*

Sources : FAO, 2007-2016 ; Department of fishing and aquaculture / FAO info sheets in Fishing and Aquaculture Department (on line), Rome, updated on May 22nd 2013



In 2003, the value of world production was 3,69 billion US dollars.

In 2010, world production of *Crassostrea gigas* was estimated at 660,000 tons, FAO source). These figures do not take China into account, a major oyster producing country where the different species are not differentiated. US production is also divided into several species, including the American Oyster, *Crassostrea virginica*.

FAO's data for 2010 gives the following diagram for world production of *Crassostrea gigas* in tons.

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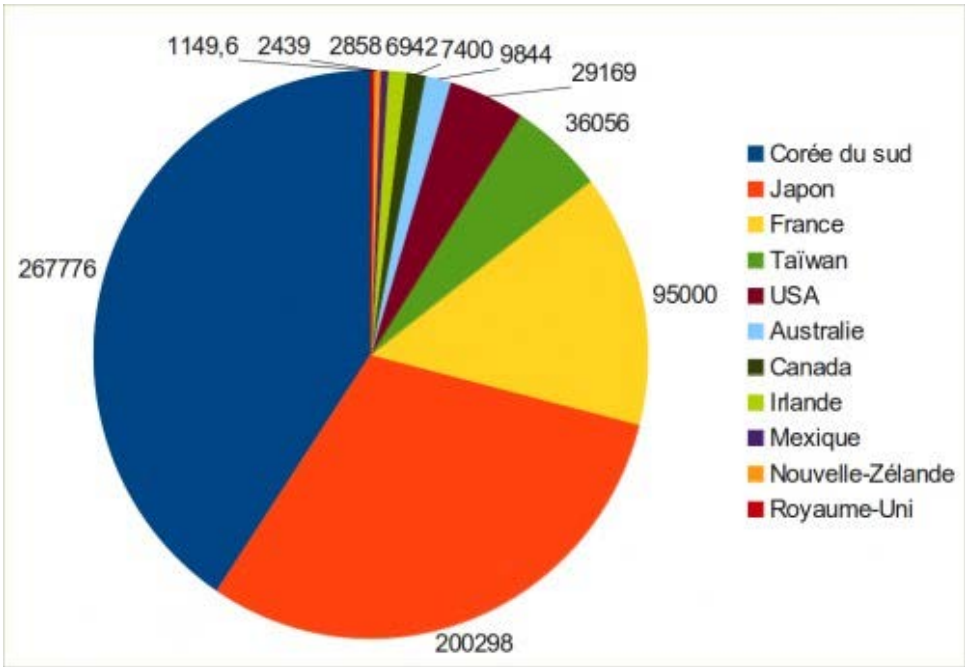

It is rather difficult to find data on the production of certified organic oysters at world level.

• EUROPEAN AND FRENCH STATISTICS

In France, oyster production has gone down between 2003 and 2012, going from 115,000 tons in 2003 down to 80,000 tons in 2012 (Source: French Ministry for the Environment, Energy, Sustainable Development and the Sea and ; German Patent and Trade Mark Office). The turnover volume was 397.1 million euros, which corresponds to a sharp fall in production volume but with a sharp increase in value.

If we set China aside, France is the 3rd producer of *Crassostrea gigas*, after Japan and South Korea.

France is the number one oyster producer in the EU. In 2012, shellfish production stemmed from about 2,900 businesses, most of which small size structures, with 66% of individual businesses. Overall, they employed 17,700 people, among whom 6,300 on full time jobs, amounting to 8,600 jobs in Full Time Equivalence. The number of businesses has decreased since 2001 but the shellfish sector, globally stable until 2008 dropped down mainly because of the mortality crisis of juveniles. 82% of these businesses breed oysters as their main activity.

French production is distributed among the following production basins (source: FranceAgriMer, plus personal count for 2015):

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French production 2015	Cupper Oysters in tons	% of French cupped oysters
Normandy – The Channel	12 820	16 %
North Brittany	13 460	16,8 %
South Brittany	6 340	7,9 %
The Loire	6 000	7,5 %
Poitou-Charentes	30 860	38,57 %
Arcachon - Aquitaine	5 540	6,9 %
Mediterranean	4 980	6,2 %

France is blessed with **several breeding basins**, the most important being **the Bay of Arcachon**, which is the first breeding site in France. (source: Regional Committee for Shell fish Aquaculture, Arcachon-Aquitaine, 2016)

With its ideal weather conditions, salinity level and sunny weather**, the Bay of Arcachon is an historical site for natural spat collection**. As early as the end of the XIXth century, the whitewashed tiles technique was developed for oyster farmers to collect larvae born from natural oyster reproduction.

Collecting spat is a major activity for this basin as oyster farmers use it for their own production but also to resale to the other French oyster basins. The Arcachon basin provides 60% to 70% of the 4.5 billion juveniles required by the total French production.

Organic production

It is rather difficult to find statistics on European and French production of organic oysters.

As far as France is concerned, an estimation can be made, based on data from the Organic Agency (Agence Bio, September 2016). For 2015, the Organic Agency lists 5 farmers specializing in organic oysters. If we consider an average production of 25 tons/year, generally agreed on by the profession, we get a total of 125 tons/year of organic oysters produced by specialized farmers.

One should add to this, as recorded by the Organic Agency, the production of farmers who grow both oysters and mussels. A reasonable estimate for the French organic oyster production in 2015 would be somewhere between 200 and 300 tons, less than 1% of the national oyster production.

However, according to interviewed professionals, this percentage has a great deal of potential for further growth.

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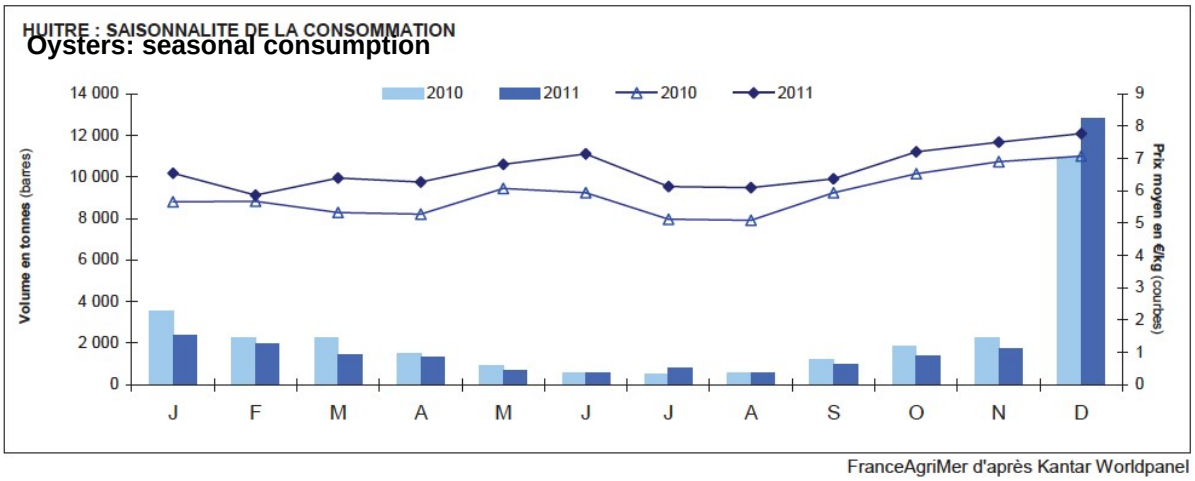
• CONSUMPTION FIGURES

A large part of the main producing countries is absorbed by local markets and supplemented by imports from neighbouring countries and commercial partners. For instance, within the commercial exchanges within the EU, France imports from the United Kingdom and Ireland.

The relatively short conservation duration is a handicap to selling the fresh product on a large scale, as consumers' preference goes live oysters. Conventional products and products with added value, including canned oysters, frozen oysters, vacuum-packed or prepared oysters with various sauces show up once in a while and have a potential for world-wide distribution. However, they represent but a tiny fraction of the total production.

The French are #1 oyster consumers in the world with 2 kg fresh oysters per person and per year.



FranceAgriMer d'après Kantar Worldpanel

• SPECIFICITIES OF OYSTER FARMING *VS* AQUACULTURE

Most experts' work and analyses as well as research programs, regulation and professional orientations tend to speak about aquaculture globally, integrating shell fish and mollusk productions, which includes oyster farming. Yet one must be aware of the strong specificities of oyster farming which make it drastically different from aquaculture in general. This also applies to organic oyster farming.

Aquaculture is dominated by the production of salmon. One can also find a lot of data on shrimp production. Biological and technical realities concerning these two prevalent species can hardly apply to oyster production. It is particularly true of juveniles and seed productions, which should be considered in a drastically different manner.

Indeed, oyster farming is specifically and above all characterized by breeding in an open natural environment. Analyses and recommendations globally applying to aquaculture can hardly apply to oyster farming. And do not at all apply in the case of juveniles supplies for organic production. One may admit to resort to juveniles engineered by specialized units for aquaculture but this finds no justification in the case of organic farming as will be shown below.

• OYSTERFARMERS' KNOW-HOW

The Oyster Farmers' Association for the Promotion of Oysters Born at Sea defends oysters born from wild spat (untampered with habitat). It gathers oyster farmers who produce and sell nothing but oysters born at sea.

Drawing on their daily practice and expertise, these sea farmers believe that the culture of oysters born and raised at sea contributes to the global objective of conservation and restoration of bio-diversity for the following reasons:

- *Crassostrea gigas* has been present in this habitat for the last 45 years, occupying the place left by the Portuguese oyster (*Crassostra angulata)* and the low rate of flat oysters (*Ostrea edulis*). Cupped and flat oysters currently coexist on oyster basins thanks to the oyster farmers' know-how. The invasive character of *Crassostrea gigas* results from the impact of hatchery seeds on the natural habitat. Picking wild oysters to counterbalance the irregular results of spat collecting is no longer necessary. Sensible management of the species must absolutely go through traditional oyster breeding.
- Collecting wild spat and breeding oysters the natural way keeps up the different foreshore ecotopes and, as a matter of course, favours biodiversity by preserving the diversity of natural habitats. The presence of an economic sea activity which is soft on the environment is a rampart against urbanisation and the artificial development of natural spaces (real estate marinas, yacht harbours, etc.).
- Introducing spat engineered by hatcheries impoverishes the genetic diversity of the species since the genitors come in very small numbers and are submitted to artificial selection. Conversely, collecting wild spat makes room for an important genetic flow, coming from populations naturally adapted to their habitats (natural selection). Such diversity plays in favour of habitat's stability and reinforces the survival of the species against pathogens.
- - By their biological capacity to reflect the qualities of their habitat, oysters born at sea are the very sentinels of shore maintenance. Feeding on natural nutrients, without any inputs of artificial substances, without any chemical treatment or genetic modification.

• HOWFRENCH CONSUMERS PERCEIVE OYSTERS

Images associated to oyster production and consumption

(source: LH2 study, Image and perception on oysters, for OFIMER, 2009)

According to LH2 study for Ofimer, 2009, oysters are a unique product, rare for their richness and fragility and precious by their geographical origin. It is *"a living product, offered by the sea"*.

Spontaneous statements by consumers make explicit reference to its natural character (*"crude", "raw", "primitive"*). **99% of all interviewed consumers consider that oysters are typically a "natural" product** (71% "totally agree" and 28% "somewhat agree").

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To sum up, among the 30-odds images expressed, the LH2 study picks 3 images emphasizing **naturality**, the pleasure of convivial atmosphere, and uniqueness.

If we compare this with the consumers' perception of organic oysters, one can assert that the notion of **naturality** remains central and is often assorted with a growing concern for **biodiversity**.

III. VALUES AND GENERAL GUIDELINES FOR ORGANIC PRODUCTION AND THEIR SPECIFIC APPLICATIONS FOR ORGANIC OYSTER PRODUCTION

• FROMTHE VIEW POINT OF EUROPEAN REGULATION

Articles 4 and 5 of **European Council Regulation No 834/2007**, published of June 28th 2007 recall that **organic production rests on the following principles:**

Article 4

a) **The appropriate design and management of biological processes based on ecological systems using natural resources which are internal to the system** by methods that : […] ii) […] practice aquaculture which complies with the principle of sustainable exploitation of fisheries ; iii) exclude the use of GMOs and products produced from or by GMOs with the exception of veterinary medicinal products ; iv) are based on risk assessment and the use of precautionary and preventive measures, when appropriate ;

[…]

d) the adaptation, where necessary and within the framework of this Regulation, of the rules of organic production taking into account sanitary status, regional differences in climate and local conditions, stages of development and specific breeding practices.

Article 5

In addition to the overall principles set out in Article 4, **organic farming shall be based on the following, specific principles:**

[…]

d) taking into account the local or regional ecological balance when taking production decisions ;
[…]

m) the exclusion of breeding artificially induced polyploid animals;

n) **the maintenance of biodiversity of natural aquatic ecosystems,** health of the aquatic environment and the quality surrounding aquatic and terrestrial ecosystems **in aquaculture production** ;

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[…]

Furthermore, in its considerations, **EC Regulation No 710/2009** from The Committee of August 5th 2009 states that:

- So as to get products that might be both sound and of great quality while reducing impact on the environment to a strict minimum, one should pay utmost attention to the aquatic areas that produce sea weed and organic aquaculture animals.
- One should elaborate an assessment of the environment, dealing with the best possibilities of adaptation to the surrounding environment and the reduction of negative impacts. And keep in mind that such an assessment has to, not only make sure that organic aquaculture production is respectful of the environment, but also has to offer more coherence *vis-à-vis* public interest at large and sustainability.
- It is necessary to recall again and again **the principle according to which organic production must remain as close as possible to nature**.
- The general principles of organic production as defined in articles 4 and 5 of EC Regulation No 834/2007 rest on **an appropriate conception and management of organic processes, based on ecological systems, using natural resources as input**, with methods using sustainable aquaculture methods. The articles also make it clear that **aquaculture production must maintain the biodiversity of natural marine ecosystems**. Reference is made to risk assessment, precaution principles and preventive measures, if needs be. Let us note that **triggering the reproductive cycle of aquaculture animals artificially with hormones or hormone by-products is incompatible with the concept of organic production as well as with consumers' perception and must be banned from organic aquaculture.**
- Breeding bivalve filter-feeding mollusks can have beneficial effects on the quality of shore waters. **One needs to establish specific rules for filter feeders** considering the fact that they do not require any extra feeding and thus reduce impact on the environment compared to other aquaculture animals.

• FROM IFOAM'S STANDPOINT (INTERNATIONAL FEDERATION OF ORGANIC AGRICULTURE MOVEMENTS)

Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved (IFOAM - 2008).

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Besides, for what specifically concerns the production of organic oysters, IFOAM takes into consideration the following points (source: interview with the people in charge at IFOAM in September 2016):

Organic regulations for aquaculture are under discussion. Also, **IFOAM agrees that hatchery production does have an impact on wild stocks and this is an important consideration**, but thus far organic standards and regulations generally allow them. **Naturally occurring or gathered seeds are preferable.** In some regions, organic seed for oysters is not available, so our discussions tend toward an allowance for nonorganic seed if it is raised under organic conditions, and with an approach that would work toward obviating the need for non-organic seed.

IFOAM has recently convened a special Working Group on the topic to give it a much more robust treatment. That group is expected to produce a revised standard by early 2018.

IV. OYSTER SEED SUPPLIES PRODUCED BY HATCHERIES IS IN ABSOLUTE CONTRADICTION WITH THE VALUES OF ORGANIC PRODUCTION AS WELL AS WITH CONSUMERS' STATEMENTS AND REPRESENTATIONS

• SCIENTIFIC ARGUMENTATION IN FAVOUR OF NATURALLY BORN OYSTERS

From the view point of respecting biodiversity

In order to satisfy their clients, oyster hatcheries work on the selection of genitors that may yield an offspring with optimized zootechnical performances. That is to say a faster, more homogeneous growth with fewer individual differences. This extreme selection and, *de facto*, the impossibility to store a large number of genitors on the premises result in – as for other animal and aquatic species – a limited biodiversity which will never compare with the biodiversity of a natural environment. (Bert,2007; Fraser D.J, 2008).

From the view point of survival of the species against pathogens

Pathogens' evolution, their resistance and fast diffusion rate are far more abundant in a marine environment than in a terrestrial one.
Indeed, water plays an important part, facilitating contact between microorganisms on the one hand and between micro-organisms and their hosts on the other, increasing their evolution by transmission of genetic material (Ceccarelli and Colwell, 2014). Water is an optimal vehicle to transport such disease agents on long distances. In addition to that, contact with the wild populations used as a reservoir is inevitable. The arrival of new pathogens and the evolution of those already identified annihilate the benefits of selection by hatcheries regarding resistance characteristics to pathogens. On the contrary, genetic diversity offered by natural seed collection can vouch for the resistance of a part of the population in case of

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infective agent specialization. Moreover, naturally collected seeds are already familiar with the conditions they will successively meet during their breeding.

From the view point of respecting the ecological balance of the local foreshore

The breeding cycle of the diploid oyster of natural origin takes 3 to 4 years. This duration allows to manage the collected stocks either by collectors placed in the sea in the summer at spawning time or by professional shore-shell picking (with a fishing license delivered by local Fishing Committees).

This supply system is well suited to oyster farming, as the activity varies according to seasons. It is practiced on a space with strong ecological issues, the foreshore, i.e. the portion of land comprised between the highest and lowest tides. The foreshore being a specific biotope, sheltering many natural related sub-habitats, alternately covered by the sea and exposed to the air, it is propitious to a specific ecosystem where wild spat develops a resistance to the force of waves, currents and tides as well as UV rays at low tide.

Seasonal rhythm allows for fallows as one must wait for the next reproduction period to renew the stocks. At some periods of the year, oyster tenures are free from activity, the soils can rest and will be ready for new stocks.

The technique of natural spat collecting is thus favourable to keeping the foreshore in good ecological shape with an impact on marine environment reduced to a strict minimum.

From the view point of a greater closeness to nature

Hatcheries had planned to produce phytoplankton for the first stages of oyster development so as to meet the criteria of organic production. Yet, during the OrAqua Venice meeting of June 2016, it was acknowledged that this was presently impossible. And it is an additional argument in favour of natural spat collection as the larvae and young individuals receive from their marine habitat diversified all the nutrients covering their needs.
So as to make spat available to oyster farmers all year long, spawners have to be artificially conditioned to accelerate gonadic maturation and gamete production, and this does not respect the natural reproductive cycle which at our latitudes can only take place in the summer time (Toulhouat, 2008).

From the view point of how to master the invasive character of *Crassostrea gigas*

The invasive character of Crassostrea gigas (PROGIG Programme, 2005) as well as its economic importance (FAO, 2014, on line statistics) are now well known. It is thus necessary to maintain an equilibrium between production and protecting the natural environment against diffusion of the species. In this respect, collecting wild spat to breed oysters is a way

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to reduce the number of external individuals that might take root in the natural environment.

Disease control

Hatchery conditions with their huge density of animals at particularly sensitive degrees of development lead to using disinfectants and antibiotics. Which entails the use of xenobiotics incompatible with organic production. It now stands for a well-known fact that antibiotics used on marine animals favour the development of antibiotic resistance (Akinbowale *et al*., 2006), amplified in aquatic environments by contacts between different species of bacteria that may transfer (Kruse and Sørum, 1994). The selection of bacterial strains can put public health at risk (Heuer et al., 2009; OIEM/HO/FAO, 2009). Antibiotics also reduce bacterial biodiversity (Le T.S.and Munekage Y, 2004). And it was demonstrated (by Oden et al., 2016) that a decrease in bacterial diversity composing the microbiota can be observed in animals coming from high mortality batches.

According to European norms, EU Directive 2006/88 dealing with health policy modalities applied to aquaculture animals and products, for disease prevention and disease control measures does not list pathogens affecting *Crassostrea gigas* in Annex IV of non-exotic diseases. The main pathogen affecting Pacific oysters, Ostreid herpesvirus OsHV-1 micro variants (OIE, 2013), remains sparse in the natural habitat (Burioli et al.2010) and that is, in part, why it was not included in the notifiable disease list (OIE et al. EU/2006/88/). Highly sensitive PCR (Polymerase Chain Reaction) diagnosis techniques (Martenot *et al*., 2010) allows batch certification before being transferred, safely and without delay, thus reducing the risk of contamination from one producing area to another.

To conclude this point, Pacific oysters born in hatcheries offer no major health guarantees vis-à-vis those born from natural spat collecting.

• TECHNICAL AND ECONOMIC ARGUMENTS IN FAVOUR OF NATURAL OYSTERS

From the view-point of sustainable development respectful of natural biological rhythms

As noted above, producing seeds in hatcheries causes a lot of ecological problems. This mode of production is not in coherence with the principles of sustainable development and even less with the principles of organic production. It also causes problems of economic disruption in the oyster sector.

The first generations of hatchery diploid cupper oysters came up in the 1970s and 1980s,. The spat or larvae would come to oyster farmers packed in oyster bags. They had to be placed on receipt in a tank of sea water, respecting hatchery protocol and then set on collecting contraptions. This form of additional supplies rapidly caused a disruption of the market.

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While an oyster farmer has to take an exam to have access to the Maritime Domain, hatcheries are free to produce more and more. They do not have to comply with any regulatory constraints.

Hatchery products come off-season.

Genitors are selected to suit the interest of each hatchery. They work on shape, on color, on size, etc. Sieving and selection are the mainstay of these industries to produce for ever more.

Over the years, stocks produced by hatcheries have increased rapidly and regularly and still without control. Fertile diploids add on to sea stocks, hence the so-called invasiveness. Until then, oyster farmers had been able to manage the natural stocks efficiently.

Taking responsibility for an adequate management of breeding basins and oyster beds

Management of stocks of oysters born at sea is a way to use rock oysters in the years when reproduction is weaker. Oyster farmers' know-how includes paying attention to marine environment, management of tenures and stocks, picking rock oysters, which creates optimum conditions so as to yield fair pay for a job well done.
By contrast, the hatchery system seemed attractive because it gave a homogenized production while diminishing waste of time and risks. Oyster farmers no longer have to manage fallows and are no longer dependent on seasons. A simple phone call to the hatchery and the oyster beds are reloaded. This leads to a total disempowerment and irresponsibility of oyster farmers.

• CONCLUSION ON THE ABSOLUTE INADEQUACY BETWEEN HATCHERY SPAT AND ORGANIC OYSTER PRODUCTION

Synthesis,

The production of seeds from natural spat collection is:

- totally compatible with the values and principles of EC regulations for organic production as well as with the values advocated by IFOAM,
- a traditional technique, perfectly respectful of shore environment and biodiversity and well adapted to the up-keeping of different geographic zones in the world where *Crassostrea gigas* is raised and, in particular, this portion with a strong ecological stake, the foreshore,
- a practice totally congruent with consumers' expectations,
- a technique, totally mastered by oyster farmers and which enables them to have at their disposal quality seeds in the respect of natural organic rhythms,

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- a technique totally adapted to the modern requisites of oyster farming in general and the requirements of organic oyster production. There is no risk of natural seed shortage to supply the organic oyster industry.
- Nothing can justify recourse to the hatchery system in the certification specifications for the production of organic oysters.

By contrast, seed production in hatcheries is:

- totally incompatible with the values and principles of EU regulations on organic oysters as well as with the values advocated by IFOAM,
- harmful to the environment and in particular has an adverse effect on biodiversity,
- an activity totally out of phase with consumers' expectations. One can safely say that consumers buying certified organic oysters raised from hatchery seeds would feel deceived. This deception on quality is unacceptable vis-à-vis the increasing credit aimed at by organic producers.
- a technique that takes away oyster farmers' sense of responsibility and professionalism, and does not respect natural biological rhythms,
- a practice that can in no way be justified by a shortage of seed concerning today's and tomorrow's needs of the organic oyster sector. The needs perfectly covered in quantity and quality by wild spat collection.

There are today only good reasons to ban the hatchery system from EU regulations on organic oysters.

V. RECOMMENDATIONS FOR THE EVOLUTION OF EU REGULATION

We propose to rewrite the entirety of **article 25o of EC regulation No 710/2009** of August 5. 2009, modifying EC regulations No 889/2008 listing implementing modalities of EC regulations No 834/2007 taking into consideration EU implementing regulation No 2016/673 dealing with organic production of aquaculture animals and seaweed, with the objective to ban the production of hatchery seeds for the production of organic oysters. This proposal concerns paragraph 2 **which intends to ban seeds engineered by hatcheries for the production of organic *Crassostrea gigas***.

Proposal for rewriting article 25o:

Article 25o

« Oyster seed origins

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

a) settlement beds which are unlikely to survive winter weather or are surplus to requirements, or

b) natural settlement of shellfish seed on collectors.

Records shall be kept of how, where and when wild seed was collected to allow traceability back to the collection area.

However, the maximum percentage of seed from non-organic bivalve shellfish hatcheries that may be introduced to the organic production units shall be 80 % by 31 December 2011, 50 % by 31 December 2014 and 0 % by 31 December 2016

2. For the cupped oyster, *Crassostrea gigas*, seeds must exclusively come from natural spat, that is to say with wild spat collected in untampered, natural habitat. The system of production from hatcheries being recognized incompatible with the values and principles of organic production, there will be absolutely no tolerance of hatchery seeds for oysters certified as organic. »

VI. BIBLIOGRAPHICAL REFERENCES

Agence Bio (2015). Baromètre Agence Bio / CSA 2015 : les chiffres à retenir, in Dossier de presse 2015 : Record d'acheteurs et de consommateurs de produits bio, pp 59

Agence Bio (2016). Baromètre de consommation et de perception des produits biologiques en France. 13ème édition. CSA, étude n° 1400610. Janvier 2016, pp 153

Akinbowale O.L., Peng H., Barton M.D. (2006). Antimicrobial resistance in bacteria isolated from aquaculture sources in Australia. J. Appl. Microbiol.,100 :1103-13.

Bert T.M., 2007. Ecological and Genetic Implications of Aquaculture Activities. Springer Science & Business Media, 30 ago 2007 - 545 pp.

Bourgault P., (2015). L'huître bio passe à table. Bio info. Newsletter du 14 septembre 2016

Ceccarelli D., Colwell (2014). Vibrio ecology, pathogenesis, and evolution. Front Microbiol., 5: 256.

ECOCERT (2014). Guide pratique animaux d'aquaculture biologique. ID-SC-191. 16.07.14 : pp 10

FAO (2007-2016) - Département des pêches et de l'aquaculture. Fiches d'information sur les pêches et l'aquaculture. Dans : Département des pêches et de l'aquaculture de la FAO [en ligne]. Rome. Mis à jour 22 May 2013.

FranceAgriMer (2012). La consommation des produits aquatiques en 2011. Pêche et aquaculture. Edition juin 2012 : 98-99

Fraser D.J., 2008. How well can captive breeding programs conserve biodiversity ? A review of salmonids. Evol. Appl., 1(4) : 535–586.

Heuer O.E., Kruse H., Grave K., Collignon P., Karunasagar I., Angulo F.J. (2009). Human Health Consequences of Use of Antimicrobial Agents in Aquaculture. Clin Infect Dis., 49 (8) :1248-1253. doi: 10.1086/605667

IFOAM (2008). Definition of Organic Agriculture. International Federation of Organic Agriculture Movements. IFOAM General Assembly, Vignola, Italy, June 2008

Kruse H, Sørum H. (1994). Transfer of multiresistance plasmids between bacteria of diverse origin in natural micro-environments. Appl Environ Microbiol., 60:4015-21.

Le T.S., Munekage Y. (2004). Residues of selected antibiotics in water and mud from shrimp ponds in mangrove areas in Viet Nam. Mar Pollut Bull, 49 : 922-9

Marchand M., L'océan sous haute surveillance, Éditions Quae, 2013, p. 80

Marie V., Hanoteau M., Oudart S. (2009). Image et perception de l'huître. Rapport d'étude. LH2, OFIMER. Etude n°5024 / n°3983, 64 pp.

Marketing Seafood, Cospirit Mediatrack (2013). Etude sur l'image de l'huître auprès des consommateurs et des acehteurs professionnels. Résumé. FranceAgriMer. Juin 2013 : pp 7

Martenot C., Oden E., Travaillé E., Malas J.P., Houssin M. (2010). Comparison of two realtime PCR methods for detection of ostreid herpesvirus 1 in the Pacific oyster *Crassostrea gigas.* J. Virol. Methods, 170 : 86-89.

Ministère de l'Ecologie, du Développement Durable et de l'Energie. Chiffres clés pêche et aquaculture 2014.

Oden E., Burioli E.A.V., Trancart S., Pitel P.H., Houssin M. (2016). Multilocus sequence analysis of *Vibrio splendidus*-related strains from blue mussel *Mytilus* sp. during mortality events. Aquaculture, 464 : 420427.

Office International des Epizooties (OIE) (2013). Infection with Ostreid Herpesvirus Microvariants. Aquatic Manual, May 2013.

Organization International des Epizooties (OIE; World Organization for Animal Health); World Health Organization (WHO); Food and Agriculture Organization of the

United Nations (FAO). Joint FAO/OIE/WHO expert workshop on non-human antimicrobial usage and antimicrobial resistance: scientific assessment, Geneva, Switzerland, 1–5 December 2003. Geneva : WHO ; 2004. Available at : http://www.who.int/foodsafety/publications/micro/en/report.pdf. Accessed 31 August 2009.

PROGIG. Prolifération de l'huître creuse du Pacifique Crassostrea gigas sur les côtes Manches-Atlantique françaises : bilan, dynamique, conséquences écologiques, économiques et ethnologiques, expériences et scénarios de gestion.

Toulhoat L. (2008). Éléments de compréhension des stratégies de captage naturel de l'huître creuse (*Crassostrea gigas*) des ostréiculteurs de Charente-Maritime. http://archimer.ifremer.fr/doc/2008/rapport-4908.pdf ***European regulation:***

Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91

Commission Regulation (EC) No 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control

Commission Regulation (EC) No 710/2009 of 5 August 2009 amending Regulation (EC) No 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007, as regards laying down detailed rules on organic aquaculture animal and seaweed production

Direction Générale des Politiques Agricole, Agroalimentaire et des Territoires. Ministère de l'Alimentation, de l'agriculture et de la Pêche (2013). Cahier des charges concernant le mode de production biologique d'animaux d'élevage et complétant les dispositions des règlements (CE) n°834/2007 du Conseil et (CE) n°889/2008 de la Commission. Homologué par l'arrêté interministériel du 5 janvier 2010 paru au Journal Officiel de la République Française (JORF) du 15 janvier 2010, modifié par l'arrêté interministériel du 28 janvier 2013 publié au JORF du 6 février 2013

Commission Implementing Regulation (EU) 2016/673 of 29 April 2016 amending Regulation (EC) No 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control