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Organic seafood Principles, markets and perspectives

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Report

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Preface

This is a report that aims to provide a brief overview of the organic seafood market. Lack of reliable and coherent data, combined with different definitions and standards of “organic,” have made this a challenging task. However, this report offers a glimpse into some important aspects of the organic seafood market, such as organic principles of production, certification criteria, the current market situation and consumers of this type of product. It also provides some perspectives for the future development of organic seafood, as perceived by the author.

This report is primarily based on secondary research available from a number of different public and private sources. The work on this report was performed during 2008. I would like to thank the FAO in Rome for providing helpful inputs and assistance during this work, particularly during my stay at the FAO in the spring of 2008. This report is also published by the FAO.

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1 Executive Summary

This report aims to provide some insights into the global organic seafood market, and is mainly based on available secondary research.

Consumer interest in organic food, in general, has increased rapidly in recent years, although organic food markets are still considered to be niche markets. Consumers have been shown to confuse organic food with other terms, such as “green”, “ecological”, “environmental”, “natural” and “sustainable”. Since there is currently no widely accepted general definition of organic food, combined with the existence of several competing and partly overlapping standards and certification schemes, this confusion is understandable. In general, however, organic farming is often perceived to be agriculture that is based on no, or very little, use of artificial fertilizers, synthetic pesticides, growth regulators or hormones and livestock feed additives.

The IFOAM principles of organic agriculture are based on health, ecology, fairness and care. As such, organic production is defined in rather broad and comprehensive terms. The role of organic agriculture, whether in farming, processing, distribution or consumption, is to sustain and enhance the health of an ecosystem and its organisms from the smallest in the soil to human beings. In particular, organic agriculture is intended to produce high quality, nutritious food that contributes to preventive health care and well-being.

This view is mirrored with EU principles, where the EU perceives organic production to be an overall system of farm management and food production that combines the best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes.

Market growth rates for organic seafood are expected to be in the range of 15-25% per annum from 2008 onwards. The global market for organic aquaculture products was estimated at 60,000 tonnes in 2007, based on production levels of these products from secondary data sources. Organic salmon is the leading organic aquaculture product. Shrimp is the second leading product, with production estimated at 14,000 tonnes in 2007. Organic cod has seen a large rise in production in recent years, with production estimated at 8,000 tonnes.

The markets for organic seafood are mainly located in Western Europe and North America, with Germany, United Kingdom, the USA, Switzerland and France as leading markets in terms of sales volume. The use of primary marketing channels for organic seafood varies, ranging from organic food shops to supermarkets, depending on the actual market.

Consumers of organic food in general are mostly younger people (<45 years old), and in particular are families with young children. Most studies conclude that households of middle and high income, with higher education and who live in urban areas, have a higher propensity for buying organic food. Regarding the consumers' willingness to pay for these organic products, the consensus from reported studies indicates that 5 to 20 percent of consumers will buy organic foods when price premiums are higher than 30 percent. Price premiums between 10 to 30 percent appeal to 10 to 50 percent of all consumers, whereas price premiums between 5 to 10 percent attract between 45 to 80 percent of the consumers.

Most research studies point to increasing health consciousness, with a focus on food safety and quality, as the major reasons for buying organic food. This normally entails a desire to avoid harmful additives, preservatives and agricultural chemicals.

The current consumer interest in health issues and product quality is expected to prevail, supporting continued interest in organic foods. The new EU legislation and potential change in the US policy towards organic seafood production could spark a further increase in this market. On the other hand, there is also a possibility that consumer interest could deteriorate. In addition, the higher production costs of organic seafood, combined with an apparent consumer preference for wild caught seafood, could also make the future of organic seafood less prosperous. Overall, the arguments vary in respect to the future of this product; therefore, it is difficult to predict its future development. However, based on current knowledge, it seems most likely that the interest in organic seafood will continue to grow, but that organic seafood still will remain a niche product in the seafood market.

2 Introduction

Consumer interest in organic food has been on the rise since the mid 1980s, particularly in European and North American markets. However, organic markets are still considered to be a niche markets (Wier and Calverley 2002), albeit rapidly growing, since organic consumption in most countries comprises only a small percentage of the entire food consumption (Wier and Calverley 2002). It has been assumed that the high growth rates will peak as the overall organic food sector reaches a substantial level, estimated at a value of five to ten percent of the entire food market (Franz 2005).

Several studies have revealed that consumers interpret the term 'organic food' differently, often confusing organic food with terms such as "green", "ecological", "environmental", "natural" and "sustainable" (Aarset et al 2000), as well as "unprocessed" and "no pesticides" (O'Dierno et al 2005). More recently, concepts such as "food mileage" and "fair trade" have added to this complexity. Since there currently is now a widely accepted general definition of organic food, combined with the existence of several competing and partly overlapping standards and certification schemes, this confusion is understandable. In general, however, organic farming is often perceived to be based on no, or very little, use of artificial fertilizers, synthetic pesticides, growth regulators or hormones and livestock feed additives (European Commission 2005).

When compared to the entire organic food market, it is clear that organic seafood constitutes only a small portion. Organic seafood is still in its infancy worldwide (O'Dierno et al 2005), but markets for organic seafood face even more rapid growth than do other forms of organic food in general. Organic aquaculture is taking place in most regions of the world (Lem 2005), with shrimp and salmon as the best sellers (O'Dierno et al 2005; Organic Monitor 2008).

This report will present the organic principles of organic food production, as recommended by the IFOAM and the EU, followed by an outline of the certification purpose, process and standards and an overview of the organic seafood market and the type of organic consumer it attracts. Finally, some concluding remarks are provided in terms of the perceived future of organic seafood sales.

3 Organic Principles

There is currently no unified definition for organic aquaculture, and there is even much discussion about whether, and how, aquaculture products can qualify as organic. The variety of cultured species, the aquacultural systems used and the cultural requirements of these species complicate these matters. In addition, most of the organic food practices and standards have been developed for terrestrial species and retrofitting these into practices and standards for aquatic species poses a major challenge for this industry (Boehmer et al 2005). The existence of wild seafood in parallel with farmed seafood and organically farmed seafood, further adds to the complexity of this issue. However, the terms “organic food” and “organic food production” imply the use of standards and certifications, based on production process and practices, and create an elusive perception from consumers for food quality and safety and general environmental, social and economic benefits for farmers and for society (Boehmer et al 2005). Also, since organic products are only those certified as being produced in compliance with strict organic cultivation methods, organic products cannot be wild, but have to be farmed (Franz 2005).

In the following section, the general principles of organic food production of The International Federation of Organic Agriculture (IFOAM) and the European Union (EU) are provided. IFOAM (2008) has developed general principles for organic agriculture, focusing on the four principles of health, ecology, fairness and care. The principles take into account ethical principles to inspire action.

3.1 IFOAM Principle of health

Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. This principle points out that the health of individuals and communities cannot be separated from the health of ecosystems – healthy soils produce healthy crops that foster the health of animals and people. Health is the wholeness and integrity of living systems. It is not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being. Immunity, resilience and regeneration are key characteristics of health.

The role of organic agriculture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings. In particular, organic agriculture is intended to produce high quality, nutritious food that contributes to preventive health care and well-being. In view of this, it should avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects.

3.2 IFOAM Principle of ecology

Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them. This principle roots organic agriculture within living ecological systems. It states that production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case of crops, this is the living soil; for animals, it is the farm ecosystem; and for fish and marine organisms, it would be the aquatic environment.

Organic farming, pastoral and wild harvest systems should fit the cycles and ecological balances in nature. These cycles are universal but their operation is site-specific. Organic

management must be adapted to local conditions, ecology, culture and scale. Inputs should be reduced by reuse, recycling and efficient management of materials and energy, in order to maintain and improve environmental quality and to conserve resources.

Organic agriculture should attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity. Those who produce, process, trade in, or consume organic products should protect and benefit the common environment, including landscapes, climate, habitats, biodiversity, air and water.

3.3 IFOAM Principle of fairness

Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings.

This principle emphasizes that those involved in organic agriculture should conduct human relationships in a manner that ensures fairness at all levels and to all parties – farmers, workers, processors, distributors, traders and consumers. Organic agriculture should provide a good quality of life to everyone involved, and should contribute to food sovereignty and to reduction of poverty. It should aim to produce a sufficient supply of good quality food and other products.

This principle insists that animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behaviour and well-being.

Natural and environmental resources that are used for production and consumption should be managed in a way that is socially and ecologically just and that can be held in trust for future generations. Fairness requires systems of production, distribution and trade that are open and equitable and account for true environmental and social costs.

3.4 IFOAM Principle of care

Organic Agriculture should be managed in a precautionary and responsible manner, in order to protect the health and well-being of current and future generations as well as the environment. Organic agriculture is a living and dynamic system that responds to internal and external demands and conditions. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardizing health and well-being. Consequently, new technologies need to be assessed and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.

This principle states that precaution and responsibility are the key concerns in management, development and technology choices in organic agriculture. Science is necessary to ensure that organic agriculture is healthy, safe and ecologically sound. However, scientific knowledge alone is not sufficient. Practical experience, accumulated wisdom and traditional and indigenous knowledge offer valid solutions, tested by time. Organic agriculture should prevent significant risks by adopting appropriate technologies and rejecting unpredictable ones, such as genetic engineering. Decisions should reflect the values and needs of all who might be affected, through transparent and participatory processes.

3.5 EU Principles of organic production

The European Union (EU) has also developed general principles of organic production (European Union 2007). The EU's point of view is that organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes. The organic production method thus plays a dual societal role in which, on the one hand, it provides for a specific market responding to a consumer demand for organic products, and on the other hand, it delivers public goods that contribute to the protection of the environment and animal welfare, as well as to rural development.

The term 'organic production' means the use of production methods compliant with the rules established in this regulation, at all stages of production, preparation and distribution. Furthermore, 'stages of production, preparation and distribution' means any stage from the primary production of an organic product up to and including its storage, processing, transport, sale or supply to the final consumer, and where relevant, labelling, advertising, import, export and subcontracting activities. Finally, 'organic' means coming from, or related to, organic production.

According to the EU, organic production shall be based on the following principles:

- (i) The appropriate design and management of biological processes based on ecological systems using natural resources, which are internal to the system, by methods that:
 - use living organisms and mechanical production methods;
 - practice land-related crop cultivation and livestock production or practice aquaculture which complies with the principle of sustainable exploitation of fisheries;
 - exclude the use of GMOs and products produced from or by GMOs with the exception of veterinary medicinal products;
 - are based on risk assessment, and the use of precautionary and preventive measures, when appropriate;
- (ii) The restriction of the use of external inputs. Where external inputs are required or the appropriate management practices and methods do not exist, these shall be limited to:
 - inputs from organic production;
 - natural or naturally-derived substances;
 - low solubility mineral fertilisers;
- (iii) The strict limitation of the use of chemically synthesised inputs to exceptional cases these being:
 - where the appropriate management practices do not exist; and
 - the external inputs are not available on the market; or
 - where the use of external inputs contributes to unacceptable environmental impacts;
- (iv) The adaptation, where necessary, and within the framework of this Regulation, of the rules of organic production, taking account of sanitary status, regional differences in climate and local conditions, stages of development and specific husbandry practices.

4 Certification

4.1 Purpose and process

Certification of organic products can serve three functions, according to Lohr (1998). First, it allows the customer to distinguish between organic and non-organic foods. Second, it assures producers that deceitful use of the term organic does not defraud them of price premiums and market share that can be earned from producing certified foods. Third, it facilitates market efficiency by reducing information asymmetry along the marketing channel from producer to consumer.

Certification necessitates the process of setting standards, verifying that the standards are met by conducting inspections and approving the producer or processor (Michaud et al 1994; Lohr 1998). When approved, the certifier's label can be displayed on the product. The label conveys information about the production process to intermediaries and consumers.

The certifiers validate that the producer or processor follows their standards, while the accreditators check that the certifiers have incorporated the minimum requirements in the standards used (Lohr 1998). These accreditators need legal authority or broad market recognition in order to harmonise and enforce minimum standards, which often entails the involvement of national or international government entities (Lohr 1998).

4.2 Standards

There is no single worldwide recognised standard for organic food, and different organisations and governments have variable definitions of what constitutes an organic product and what certification process it needs (Siderer et al 2005). The following is an overview of some of the main bodies involved in certification and accreditation activities involving the organic food sector.

The International Federation of Organic Agriculture (IFOAM) developed a basic standard (IFOAMs' basic standard - IBS) for organic production in 1998 (revised in 2002) as a framework for further developing local organic standards and with the aim of harmonising the different standards then in place. IFOAM established the International Organic Accreditation Service (IFOAS) to function as its accreditator.

Another international organisation that develops standards for organic products is the Codex Alimentarius Commission. This intergovernmental body, supported by the Food and Agriculture Organization (FAO) and World Health Organization (WHO) of the United Nations, established a proposal for a worldwide standard of production and marketing of organic food products in 1999 (revised in 2001). These regulations are the basis for solving trade conflicts by the World Trade Organization (WTO).

The European Union (EU) has regulated organic production based on EEC Regulation No. 2092/91 and EEC Regulation No. 1804/99. These regulations include principles for production, labelling and inspection, and are largely based in the basic standards of IFOAM (IBS).

There is now a new regulation, EEC 834/2007, expected to be valid effective January 2009, and which will replace these former regulations. The new rules set out a complete set of objectives, principles and basic rules for organic production, and include a new permanent

import regime and a more consistent control regime. It is expected that this new regulation will significantly impact the market for organic food in Europe.

The use of the EU organic logo will be mandatory, but it can be accompanied by national or private logos. The place where the products were farmed has to be indicated to inform consumers. Food will only be able to carry an organic logo if at least 95 percent of the ingredients are organic. Non-organic products will be entitled to indicate organic ingredients on the ingredients list only. The use of genetically modified organisms will remain prohibited. It will now be made explicit that the general limit of 0.9 percent for the accidental presence of authorised GMOs will also apply to organic products. There will be no changes in the list of authorised substances for organic farming. The new rules also create the basis for adding rules for organic aquaculture, wine, seaweed and yeasts. In the second part of this revision exercise, and building on this new regulation, the existing strict detailed rules will be transferred from the old to the new Regulation.

In the United States the US Department of Agriculture (USDA) is responsible for approving organic food products. For the time being, only seafood grown on land-based or closed-containment systems is approved as organic. In effect, this policy hinders any significant supplies of organic seafood onto the market. However, and in spite of strong opposition, the use of open-net cages and use of wild-caught fish as feed have been proposed by the National Organics Standards Boards (NOSB) as allowable (NOSB 2008), and a final decision is expected shortly. In the meantime, the term organic seafood is not accepted or allowed for US produced seafood, although some foreign-produced seafood with third party certification can be found in the US.

5 Overview of the organic seafood market

There is an absence of data on the organic aquaculture products market. No reliable data are available on the market size and market growth rates for individual countries, regions and the global level. However, estimates by Organic Monitor (2008) have been calculated to give the market size and predict market growth rates.

The global market for organic aquaculture products was estimated at 60,000 tonnes in 2007. This estimate is based on production levels of organic aquaculture products from secondary data sources. If global seafood production is about 135 million tonnes, then organic products have less than a 0.1 percent share of total seafood production.

Table 1 gives estimates for historic and projected market growth rates. The market for organic aquaculture products is growing at a fast pace. High growth rates are due to the market starting from a small base with organic aquaculture products representing less than 0.1 percent of total seafood products. Growth of 20-25% was estimated in 2007, generating sales volume at about 60,000 tonnes.

Table 1 Organic Seafood Products: Global Market Size & Forecasts for 2004-2011

	Market size (tonnes)	Projected market growth rates		
	2007	2004-06	2007	2008-11
Organic aquaculture products	60,000	30-50%	20-25%	15-25%

Source: Organic Monitor 2008

The major driver of market growth is the widening availability of organic aquaculture products in retail outlets. Greater supply is bringing organic aquaculture products into a large number of retailers of organic foods. More consumers of organic foods are buying these products as they become aware of the production differences between organic and non-organic fishing methods. Market growth of 15-25% per annum is projected from 2008 onwards. Although most countries are expected to show higher growth rates, leading country markets like the UK and Germany are expected to show sluggish growth in 2009, and perhaps in 2010, because of the economic slowdown.

It is much more difficult to determine the market size in terms of revenues. Apart from the problems in getting reliable data on sales volume, there are difficulties in calculating retail prices. Prices vary considerably according to country, retailer type, product type, seasonality and supply-demand. In general, prices are lower in supermarkets than in organic food shops, because the former prefers to buy direct from fish producers. Various fish formats also prevent average retail prices to be determined. For instance, smoked salmon is usually priced twice as much as non-smoked salmon fillet.

Organic Monitor (2008) estimates global sales of organic food & drink reached about \$45 billion in 2007. It is possible to estimate that organic seafood products have a market size in the region of \$1 billion. Thus, organic seafood has a market share of about 2 percent of all organic food & drink sales. Growth in the organic seafood market is expected to outpace growth in the global organic food & drink market (projected to show compound annual growth of about 11 percent).

5.1 Regional Analysis

Most sales of organic seafood are from Europe; Organic Monitor estimates that about 40,000 tonnes of sales volume were from this region in 2007. North America has a much smaller market (estimated 10,000 tonnes) because there are no formal standards for organic seafood products. Another 10,000 tonnes are estimated to be sold in other regions. Most sales are from Asia-Pacific countries like Japan, Australia and New Zealand. Although Latin American countries are becoming important producers, there is only a small internal market for organic seafood in the region.

The leading country markets for organic aquaculture products are listed in order of market size in table 2. The most important sales channels for these organic products are also highlighted.

Table 2 Leading country markets and major channels for 2007

Country	Major channels
Germany	Organic food shops
United Kingdom	Supermarkets
USA	Natural food shops
Switzerland	Supermarkets
France	Supermarkets

Source: Organic Monitor 2008

5.2 Product Analysis

In terms of volume, organic salmon is the most common organically farmed species in the world, with most production occurring in Western Europe. Table 3 gives the estimated breakdown of the market size by organic aquaculture species.

Table 3 Estimated breakdown of market size by major species for 2007

Product	Estimated volume
Salmon	15,000 tonnes
Shrimp	14,000 tonnes
Cod	8,000 tonnes
Mussels	2,000 tonnes
Trout	1,500 tonnes
Others	19,500 tonnes
TOTAL	60,000 tonnes

Source: Organic Monitor 2008

5.3 Product Estimated Volume

Organic salmon is the leading organic aquaculture product. It is mostly produced in Ireland and Scotland, producing over 6,000 tonnes each.

Shrimp is the second leading product, with production estimated at 14,000 tonnes in 2007. Vietnam, Ecuador and the US are leading producer countries.

Organic cod has seen a large rise in production in recent years, with production estimated at 8,000 tonnes. The UK is the main producer.

Organic trout is produced in various European countries including the UK, Switzerland, Germany and Denmark. Organic mussels are mainly produced in New Zealand.

Other species include tilapia, seabass, seabream, carp, sturgeon, arctic char, turbot, tench, etc.

6 Consumers

6.1 Organic consumer profiles

Many studies report on characteristics of consumer demographics. As reviewed by Wier and Calverley (2002), most of these studies conclude that consumers with a high propensity to buy organic foods are mainly younger people (<45 years) and families with young children. These results are confirmed by the "QualityLowInputFood" study (Midmore et al 2005). In this latter study, the purchase propensity of organic food was found to be increased if the children were younger than 15 years, and if there were only one or two children present in the household.

When it comes to educational level, most studies conclude that consumers of organic food have higher education, but some other studies do not support this finding (Midmore et al 2005; Wier and Calverley 2002).

There are also somewhat conflicting findings on the income level for organic food consumers. However, most studies find that households with middle and higher income levels show a greater propensity to buy organic food than do households with lower income levels (Midmore et al 2005; Wier and Calverley 2002).

The location of the consumers has also been shown to have a significant effect on household organic budget share (Midmore et al 2005). The organic budget shares were higher in urban areas, especially in the capital areas.

Regarding the consumers' willingness to pay for these organic products, the consensus from reported studies indicates that 5 to 20 percent of consumers will buy organic foods when price premiums are higher than 30 percent. Price premiums between 10 to 30 percent appeal to 10 to 50 percent of all consumers, whereas price premiums between 5 to 10 percent attract between 45 to 80 percent of the consumers (Wier and Calverley 2002). However, there are variations in these percentages among different countries.

6.2 Consumer purchase motivations

Most research studies point to increasing health consciousness, with a focus on food safety and quality, as the major reason for buying organic food. This normally entails a desire to avoid harmful additives, preservatives and agricultural chemicals (Wier and Calverley 2002).

In addition, a study by O'Dierno et al (2005), emphasised that consumers perceived organic food as being produced without synthetic pesticides, unnatural fertilizers, added growth hormones, antibiotics, artificial additives, food colouring, or ionizing radiation and that it was not genetically modified in any way. Boehmer et al (2005) largely concurred and claimed that consumers desired to buy natural, hormone-free and antibiotic free products. QILF results also indicate that the consumers prefer food to be free from pharmaceutical and pesticide residues (Midmore et al 2005). Different consumer purchase motivations, as found by O'Dierno et al (2005), are listed in Table 4. However, these reasons have proven to vary somewhat in consumers from different countries (Aarset et al 2000).

This increasing health consciousness and interest in food quality in all probability has been influenced by a number of food scares (such as the BSE) that have occurred within the larger and more conventional systems of food production (Aarset et al 2000). In addition, it is reasonable to expect that Non-Governmental Organisations' (NGO) pressure on food

retailers and policy makers also results in heightened awareness of organic foods and increased availability for consumers.

Other types of motivation for buying organic food have also been reported. These motivations are particularly related to environmental or ethical issues. Consumers with these motivations display an “idealistic” attitude in their stated preference, but represent only a minor fraction of the total number of consumers (Wier and Calverley 2002).

Table 4 Reasons for wanting to purchase organic seafood

Reason	Average percentage
Chemical/pesticide free	95
Free of antibiotics	87
Safer	64
Superior flavour	62
Ecologically sound	59
Better quality	59
More nutritious	54
Credible standards	49
Animal welfare	36

Source: O’Dierno et al 2005, p 22.

On the other hand, what are the explicit reasons for not buying organic seafood, as expressed by consumers? Wier and Calverley (2002) list the following reasons for not wanting to buy organic seafood, and have labelled these as market barriers. First, there are differences in consumer demand that vary by country. Second, the labelling is confusing. Third, there are insufficient supply and distribution channels. Fourth, the price premiums are too high.

O’Dierno et al (2005) provide similar reasons. Their research indicates the following reasons for not wanting to buy organic seafood: First, the products are too expensive (both in absolute terms and compared to conventional products). Second, there are no credible standards for certification. Third, there is limited availability.

Taken together, these suggestions can be used to construct the following list of reasons for not wanting to buy organic seafood:

- There are varying consumer demands in different markets
- The product price is considered to be too high (both in absolute terms and compared to conventional products)
- There is consumer confusion and distrust about labelling, standards and certification
- There is limited availability, at the places where consumers want to buy the products

Also worth noting, in this respect, is the fact that many of the highly interested, and thus probable, consumers prefer wild seafood over aquacultured seafood, including organic seafood (O’Dierno et al 2005). These consumers perceive wild seafood to have the highest quality, clearly above both organic, aquacultured seafood and conventional aquacultured seafood.

7 Some perspectives on the future development

What prospects can be seen in the near future for organic seafood? Will consumer interest continue to increase steadily? Will interest grow substantially to the level where organic seafood in effect becomes the mainstream product? Or will interest fade away?

Organic seafood is known to be more costly to produce than is conventional aquacultured seafood, and consumers are price sensitive when it comes to seafood. Furthermore, substantial amounts of preferred wild seafood are available as alternatives to organic seafood, as well as (less expensive) conventional aquacultured seafood. This type of situation does not support the idea of organic seafood being a future mainstream product, but could be supportive of its current growth and position as a niche product.

Currently, there is a lack of common standards and regulations for organic seafood. However, this may change, for instance because of the effect of new EU regulations and a potential US-based acceptance of the use of open-net cages and use of wild-caught fish as feed. Both of these resolved issues would be expected to have a rapid and substantial impact on the largest organic markets, the EU and US. This situation would motivate marketing efforts by suppliers, increase transparency and competition, and increase seafood differentiation opportunities and consumer acceptance. In effect, this would be expected to cause a growth in the organic seafood sector.

Furthermore, the current consumer interest in health issues and product quality is expected to prevail. Recently, research results from studies of organic food, such as the EU project "QualityLowInputFood" (QLIF), have indicated that organic foods have superior nutritional composition; for example, organic milk contains higher levels of beneficial fatty acids, antioxidants and vitamin than does conventional milk (QLIF 2008a; QLIF 2008b). However, controversy and uncertainty still exist. If more research concludes with better quality (and/or better taste), this claim would undoubtedly enhance consumer interest in organic food in general, including seafood.

On the other hand, organic food could fall victim to the same situation as conventional foods, in terms of future food scandals. Organic markets are growing rapidly and have, in some areas, reached substantial levels. The increased supplies and larger production sites increase the risk of widespread health scandals. Organic foods are, for instance, produced with less use of pesticides, which could increase the risk of substantial attacks from bacteria or mould fungi. A single widespread food scandal of this type could shake the entire foundation of organic foods.

Currently, consumer trends support an increased growth of the organic food sector. However, these trends may change. For instance, a variety of ethical issues could influence the acceptance of organic foods. One such issue could be based on the perception that organic food production requires more resources and is less productive than conventional food production. In a situation where parts of the world are experiencing food shortages, many consumers could start questioning the ethical side of organic food production.

For less developed countries (LDCs), the prospect of producing and marketing natural products could be viewed favourably. However, lack of developed marketing channels and the long distribution to the largest markets, consisting of mainly a few industrialized countries in Europe and North America, may limit their potential success of organic seafood. Combined with a general lack of trust by consumers in foreign control and certification, and the belief that long transportation conflicts with the underlying idea of organic food (Wier and Calverley 2002), it may be difficult for LDCs to succeed in some of these markets.

Overall, the arguments vary in respect to the future of organic seafood, and it is difficult to predict its future development, which will depend on consumer trends and public regulations. However, based on current knowledge, it seems most likely that the interest in organic seafood will continue to grow, but that organic seafood will remain a niche product in the seafood market.

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