



Of earth ponds, flow-through and closed recirculation systems – German consumers' understanding of sustainable aquaculture and its communication



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ARTICLE INFO

Article history:

Received 14 April 2014

Received in revised form 5 January 2015

Accepted 6 January 2015

Available online 15 January 2015

Keywords:

Aquaculture

Fish farming

Sustainability

Consumer behavior

Label

Organic aquaculture

ABSTRACT

Although aquaculture can have various positive effects, it is also criticized for its potentially negative impacts on the environment and for its consequences on fish welfare. One solution to these problems and a promising development track for the German aquaculture sector is the promotion of sustainable production methods. The establishment of a new market segment for domestic, sustainable fish from aquaculture would suit the trend towards ethical consumerism. Thus far, only little is known about the consumers' knowledge and perception of different production methods used in aquaculture especially in comparison to each other. Against this background, the present contribution aims to explore perceptions and knowledge of German consumers with regard to sustainable aquaculture, its production systems, related labels, and communication messages. Focus groups were used to obtain insight into the multitude of consumers' perceptions. One result is that consumers, even though they had little knowledge of aquaculture, often had a limited need for information about aquaculture. For the most part, they were unaware of potential problems resulting from aquaculture. However, they had some clear expectations on sustainable aquaculture. The use of drugs (e.g. antibiotics) should be minimized; production systems should be near-natural and should respect fish welfare. Earth ponds were the most desirable of the presented production systems. Participants were mostly unfamiliar with existing labeling schemes and found the presented communication messages too vague and/or too complex. They wanted to rely on the aquaculture industry to comply with sustainable standards. Our results leave the aquaculture sector with the task of communicating sustainable aquaculture in a reliable and comprehensible manner to consumers. Thus far, consumers who are generally interested in sustainability issues seem to prefer organic aquaculture products to products from other forms of sustainable aquaculture.

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1. Introduction

Currently, aquaculture is one of the fastest-growing food-producing sectors globally (FAO, 2012). From 1980 to 2010 world production of farmed fish has increased nearly 12-fold with an average annual growth of 8.8% (FAO, 2012), whereas capture fisheries production has remained constant. As the global demand for seafood also rises, hopes that aquaculture might contribute to global food security while simultaneously reducing the pressure on wild fish stocks are also rising (Swaminathan, 2012). Yet these hopes involve some problems, which have to be faced by the aquaculture industry in order to continue to grow and prosper. As several studies have pointed out (FAO/NACA, 2010; Jacobs et al., 2002; Naylor et al., 2000; Olesen et al., 2011), the rapid expansion of

aquaculture has entailed and can entail ecological and social problems as well as potential health risks for consumers.

Thus far the German aquaculture sector has not made a contribution to increasing worldwide production. Nearly 90% of the fish consumed in Germany are imported (FIZ, 2013). German aquaculture competes with production from countries which have lower labor costs and in many cases lower environmental standards. That is why the German aquaculture sector has to develop high price market segments in order to grow. A promising development track for the German aquaculture sector could be an improved and more focused communication of its sustainable production methods. The advancement of a market segment for domestic, sustainable fish would suit the trend towards ethical consumerism in Germany (Lasner, 2011). Moreover, parts of German aquaculture might meet the requirements for sustainable production easily because many of the German fish farms are semi-extensive (not intensive) and work with near-natural systems (e.g. earth ponds) (DESTATIS, 2013). Sustainability is defined as integrating the three dimensions of environmental, social and economic development (World Commission

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on Environment and Development, 1987) and has been extended to include animal welfare considerations.

Various studies (e.g. Jaffry et al., 2004; Olesen et al., 2010; Verbeke et al., 2007a; Whitmarsh, Palmieri, 2011) have found that to some consumers sustainability and fish welfare are important additional values. In this context, implementing sustainable practices supposedly provides an opportunity for product differentiation on the market (Mauracher et al., 2013). Sustainable aquaculture does match the demand of a particular consumer segment that appreciates additional ethical values of products by simultaneously tackling potential negative implications of conventional aquaculture (see also Altintozglou et al., 2010b; Lasner, 2011).

The question of how to best communicate sustainable production to consumers still has to be answered. To date, labeling is the most frequently used approach. Different initiatives for labeling sustainable aquaculture products exist on the German market. The most common are eco-labels, such as 'Naturland' (an organic farmers' association, which has certified organic fish since the 1990s), the EU organic logo (in accordance with the EU Regulation on 'Organic production and labeling of organic products', EC 834/2007 since 2010 for aquaculture products) and the national organic logo (the German Biosiegel also since 2010 for aquaculture products). Additionally, some other company and third party labels, which also refer to sustainable aquaculture, exist on the German market. The ASC label ('Aquaculture Stewardship Council') is one recent example of a third party labeling scheme for sustainable aquaculture products. It was introduced in 2012 to the German market.

Labeling is a market-based instrument, which aims at providing selected information in a condensed manner in order to influence consumers' product perception, evaluation and purchase decision (Thøgersen et al., 2010). Labels have an impact on consumers' purchase decision if consumers are aware of, comprehend and approve them (Janssen, Hamm, 2011). Labels are particularly important for products which consumers cannot easily make a quality assessment. Thus, labels often serve as quality indicator for consumers (Verbeke et al., 2007a). Labels are also needed to indicate product properties which consumers can neither observe nor verify, such as specific production methods. These properties are called credence attributes. Labels have the potential to convert credence attributes into search cues (Albersmeier et al., 2010; Kalshoven Meijboom, 2013). However, the applied standards have to be credible to and comply with consumers' expectations.

Although some research does exist on sustainability in fish production in general, thus far only little is known about consumers' knowledge and perception of sustainability in aquaculture and about promising ways of communicating these sustainable practices to consumers. The aim of this contribution is to close this gap by exploring perceptions and knowledge of German consumers with regard to sustainable aquaculture, its production systems and corresponding labels as well as communication messages. From these findings we make recommendations for an improved communication of sustainable aquaculture and its products to consumers.

2. Methodological approach

In this exploratory research, we used the methodological approach of focus groups. Focus groups are loosely-structured interactive discussions among a small group of respondents (6–12), headed by a trained facilitator. The strength of this technique lies in discovering the unexpected, which may result from a free-flowing group discussion. Focus groups offer the opportunity to gain deeper insights into consumers' perceptions by letting them exchange thoughts and opinions in a dynamic manner (Blank, 2007; Halkier, 2010; Wilson, 1997). The discussions in focus groups stimulate the expression of individual opinions by actively building on social interaction and avoiding predefined variables (Halkier, 2010). In this manner, individual opinions are more likely to become transparent in focus groups than in standardized

interviews in isolated environments (Finch, Lewis, 2003). The prevailing range of opinions, perceptions, and preferences regarding an issue can be assessed (Ryan et al., 2014). Indeed, due to the openness of the method, the exploration of future research questions is facilitated. Focus groups can elicit relevant variables for subsequent quantitative steps (Rabiee, 2004).

We conducted 6 focus groups each consisting of 7 to 12 participants in three German cities (Stuttgart, Leipzig and Hamburg) in April 2013. Participants were recruited by means of a representative online access panel run by a commercial market research agency. Quota sampling was used with respect to age and employment:

- 50% of the participants needed to be aged 20 to 45 and the other half 46 to 70,
- a minimum of 33% and a maximum of 80% of the participants had to work part- or full-time,
- no employment in agriculture, fisheries, food industry and market research.

Additionally, all participants purchased fish at least once a month. Three groups consisted of consumers who almost exclusively buy conventional food, whereas the other three groups were composed of consumers who stated that they also buy organic food. Consumers were classified as buying organic if they purchased organic food at least once a week. According to Sanders (2013) about 41% of all German consumers belong to this group. In total 56 people participated, half of whom were organic food consumers.

Each focus group discussion lasted one to one and a half hours and followed a thematic guideline. Participants were asked about their understanding of sustainable aquaculture. Afterwards, they were informed about three production methods prevalent in Germany (earth pond, flow-through system and closed recirculation system) within the focus groups (see Fig. 1). Based on this information, they discussed their attitudes towards the presented systems.

Next, the participants were exposed to five different communication messages:

- Near-natural production
- Plenty of room to move
- Minimal drug usage
- No environmental pollution through nutrient run-off
- Minimal usage of fish meal and fish oil in order to protect the oceans.

These messages had previously been identified on fish packages. They were selected because they cover different aspects of sustainability and are characteristic for the packages on the German market. They displayed various levels of abstraction and demanded different degrees of previous knowledge. The participants were asked to argue about the purchase relevance of these messages.

Afterwards, we showed the participants the five most prominent sustainability labels for products from aquaculture on the German market: the three labels indicating organic production (EU organic logo, 'Naturland', 'Bio-Siegel'), the company label of Femeg 'zertifiziert kontrolliert nachhaltige Fischzucht' ('certified controlled sustainable fish farming'), and the label of the non-governmental organization World Wild Fund for Nature (WWF) (see Fig. 2). Even though the WWF-label does not indicate a certification scheme, it was considered in the study. It is frequently used on fish packages to indicate sustainable production. The German supermarket chain EDEKA actively communicates "its partnership with the WWF for sustainability" (EDEKA, 2014). Additionally, we showed the ASC-label ('Aquaculture Stewardship Council') which by then had been newly introduced to the German market. It was listed because the food industry expects it to become an important sustainability label. All labels were presented on a slide at the same time and in the same constellation as shown in

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