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Summery and conclusion of the market possibility for Danish organic trout

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The last part of WP 6 Market Possibilities, are dealing with the market aspects of organic rainbow trout. There has been used three different approaches:

1. The position of the organic trout compared to other options of organic fat fish species in Denmark and Germany
2. The consumers perception of organic fish – especially organic trout
3. A market analysis of the future potential of organic trout in selected European countries.

The first approach looked into the possibility for organic trout to achieve a price premium over conventional farmed trout. Because it is too premature to be able to find valid results, salmon is used as an example. Both if the amount of produced organic trout is growing and if eco-labeled trout is introduced, such as ASC – label. This last part illustrated by the introduction of MSC – labels in the wild fish from marine areas. An interesting survey has been done with Germans consumers, comparing the impact of Animal Welfare and Environmental Information.

The second approach looked into the consumer's perception of organic trout. This has been done by comparing surveys and conducting focus groups studies in Germany. Among the results are a general perception that farmed fish can be compared with farmed agriculture animals. This gives a negative perception. There is a variety of organic labels used in Germany and these have a high degree of trustworthiness and are used promoting the organic trout products. Denmark is regarded as a country with high standards in sustainability and esthetical issues.

The third approach has been a market analyses in selected European countries. The analysis has been based on interviews, visits to shops and exhibitions/trade shows, literature and statistics. Germany is the biggest market for Danish produced organic trout. One of the main results is that there is an increasing demand on organic fish products in Europe. And that at present there is a 30 % higher price for organic fish products, than on non-organic products.

The abstracts, summaries and partly conclusion for the different approaches are given below. After this presentation an overall conclusion is given, and the future perspectives are outlined.

Sammendrag

Som den sidste del af arbejdspakke 6, er det valgt at lave en samlet konklusion for markedsmulighederne for økologisk ørred. Der har været valgt tre forskellige tilgange til at belyse markedsmulighederne:

i) Markedsøkonomisk position for økologisk ørred sammenlignet med andre økologisk fisk – primært laks
ii) Forbrugernes opfattelse af økologisk fisk – specielt økologisk ørred
iii) Markedsanalyse af det fremtidige potentiale for økologisk ørred i udvalgte europæiske lande

Den første tilgang har set på mulighederne for økologisk ørred til at opnå en merpris i forhold til konventionel produceret ørred. På grund af den relative lille markedsandel og manglende statiske oplysninger, er økologisk laks blev valgt som eksempel.

Den anden tilgang har set på forbrugernes opfattelse af økologisk ørred. Der er, på baggrund af en gennemgang af tilgængeligt materiale fra sammenlignende undersøgelser, foretaget flere fokus gruppe interviews i Tyskland, fordi Tyskland er uden sammenligning det største marked for dansk produceret økologisk ørred. Det blev konstateret, at der stadig sker en sammenligning mellem opdræts fisk (ørred) og industriel producerede landbrugsprodukter som f.eks. svin. Dette giver en negativ opfattelse af blandt andet økologisk ørred. Der er en god mulighed i at benytte de anerkendte økologiske mærker som Naturland, Bioland og Demeter. Danmark har et godt ry som producentland med en høj bæredygtighed og etik.

Den tredje tilgang har været en markedsanalyse i udvalgte europæiske lande. Undersøgelsen har været baseret på interviews, besøg i forretninger og på udstillinger, samt tilgængelig litteratur og statistik. Tyskland har været hovedfokus pga af sin stilling som det dominerende marked for dansk økologisk ørred. Et af resultaterne var, at der er god efterspørgsel på økologisk ørred og at disse produkter indbringer en merpris på 30 % over konventionel produceret ørred.

Efterfølgende er bragt de abstracts and summeries, der er grundlaget for denne afsluttende sammenfatning og konklusion. Den fremtidige markedssituation er ligeledes vurderet.

Price premium of organic salmon in Danish retail sale

The year 2016 was pivotal for organic aquaculture producers in EU, because it represents the deadline for implementing the complete organic life cycle in aquaculture production. Depending on the sturdiness of farms already producing, such a shift in the industry may affect production costs of exclusively using organic fry for production. If the profitability of the primary organic aquaculture producers should be maintained, then farmers must be able to correspondingly receive higher prices, transmitted through the value chain from the retail market. This study identifies the price premium for organic salmon in Danish retail sale using consumer panel scanner data from households by applying a random effect hedonic price model that permits unobserved household heterogeneity. A price premium of 20% was identified for organic salmon. The magnitude of this premium is comparable to organic labeled agricultural products and higher than that of eco-labeled capture fishery products, such as the Marine Stewardship Council. This indicates that the organic label also used for agricultural products may be better known and trusted among consumers than the eco-labels on capture fishery products.

Ref: Ankamah-Yeboah, I., Nielsen, M., & Nielsen, R. (2016). Price premium of organic salmon in Danish retail sale. *Ecological Economics*, *122*, 54-60.

Does organic supply growth leads to reduced price premiums? The case of salmonids in Denmark

Consumers buy organic products to attain satisfaction, while farmers invest in organic production to achieve price premiums. However, investors prefer to avoid the risk of falling prices when organic supply increases. We suggest analyzing price formation of organic and conventional products by using market integration tests and relative inverse demand function to reveal whether increasing organic supply reduce price premiums. Increased organic supply reduces prices if organic and conventional markets are independent, while price premiums remain unchanged with perfect interdependency, since conventional supply is large. With imperfect interdependency, price premium flexibility evolves. The method is applied to the Danish market for farmed salmonids. Cointegration is identified in the farm level trout and retail level salmon markets, while the Law of One Price (LOP) only holds in the trout market when tested without trend. Under the assumption of supply growth, LOP is rejected. At the retail level for salmon, imperfect market integration appears. The relative inverse demand indicates price premium flexibility could reduce to half when the organic market share doubles. The results show that organic and conventional salmonid prices are tied together, but also that the price premium might be reduced with organic supply growth. Price premiums might prevail when investing in organic salmonid farming, but not at the current level in the long run.

Ref: Ankamah-Yeboah, I., Nielsen, M., & Nielsen, R. (2017) Does organic supply growth leads to reduced price premiums? The case of salmonids in Denmark. (In revision).

Consumer preference heterogeneity and preference segmentation: The case of eco-labeled salmon in Danish retail sales

Sustainably produced food products have rapidly grown in popularity in recent years. Eco-labels that are used to indicate the environmental sustainability of products have also been implemented in the seafood market, with the Marine Stewardship Council (MSC) label for wild fish as the leading eco-label. However, it is not clear whether consumers really notice the values behind an eco-label and how important these attributes are in their purchasing decision. This study analyzes data from a household scanner panel in Denmark to investigate actual consumer preferences when faced with competing product attributes, such as organic-labeled farmed and MSC-labeled wild salmon. To explicitly account for consumer heterogeneity, a mixed logit and latent class models are applied. The results indicate substantial consumer preference heterogeneity with respect to eco-labeled salmon, with a majority of consumers preferring the non-labeled alternatives. Five consumer segments are identified by the latent class model, which reveals that there is a consumer segment with preference for organic salmon. However, a preference for MSC labeled salmon is not identified. Consumers belonging to the organic segment do not have a preference for MSC labeled products. Another consumer segment avoids both organic and MSC products, while the last two segments avoid either organic or MSC only.

Ref: Ankamah-Yeboah, I., Asche, I., Bronnmann, J., Nielsen, M. & Nielsen, R. (2017). Consumer preferences for farmed organic salmon and eco-labelled wild salmon in Denmark (In revision).

Impact of Animal Welfare and Environmental Information on the Choice of Organic Fish: Evidence from German Consumers

Unlike organic labeling of plants, organic labeling of animal based products claims both environmental protection and animal welfare issues. This article examines the effect of information on these to issue or their combination thereof on consumer preferences in the setting of the EU organic aquaculture production principles. A choice experiment was used to examine German consumers' preferences for farmed rainbow trout, where respondents were split into groups receiving different levels of information. The results show significant preference for organic labeled fish products among majority of consumers. Informing consumers about animal welfare consequences associated with the label significantly increases the likelihood of choosing a labelled product. A similar effect was not found when informed about environmental consequences. When being informed of both environmental and animal welfare consequences, the priority for choosing organic was a little lower than when being informed of health alone. Thus, combining both sets of information may overwhelm consumers and leads to a lower marginal utility of organic products compared with the animal welfare effect.

Ref: Ankamah-Yeboah, I., Jacobsen, J. B., Olsen, S. B., Nielsen, M. & Nielsen, R. (2017). Impact of Animal Welfare and Environmental Information on the Choice of Organic Fish: Evidence from German Consumers. (In revision).

Research report on organic aquaculture and consumer perception – Part 1

Surveys performed among consumers showed that the knowledge about sustainability and organic fish is relatively fragmentary; e.g. stories from the media detached from the context "overfishing", not healthy fish farmed in Asia etc. Very few was able to identify specific rules for organic fish, and often they were mixed up with the MSC certification.

Most part of the Danish organic fish production is currently exported to Germany and due to this the research project RobustFish has investigated the perception of organic fish among German consumers. In cooperation with Fachhochschule Münster Aalborg University has made a survey among German consumers on how they perceive organic fish.

The investigations showed that the perception of organic fish is influenced by their general perception of farmed fish and their perception of agricultural production. Many consumers have a negative perception of farmed fish and rank the production alongside the industrialized agriculture – often contradicting the catch of vild fish in the sea.

Specific for Germany is the existence of regional and local certified products, e.g. Naturland, Bioland, Demeter mm. These conditions are significant to the general perception of organic products among German consumers.

Generally, the participants of the surveys had a positive perception of the food production in Denmark as regards sustainability and ethics. Hence, the consumers express expectations, that the standards in Denmark are high compared to e.g. Germany. In particular, consumers expressed personal experiences of a high gastronomic leveI in Denmark.

Ref: Nielsen, T., Dahl Kristensen, J., (2018): Research report on organic aquaculture and consumer perception – ICROFS-ORGANIC RDD 2/RobustFish, Deliverable D6.3.1/4.

Analysis of the market potentials for organic trout and trout products on the Danish, German, Austrian, Swiss and French seafood markets.

Germany is one of the biggest markets for organic trout and is by all, the biggest importer of organic trout produced in Denmark. The analysis has been based on interviews by phone, personal interviews, visits to shops and exhibitions/trade shows and ad viable literature and statistics.

The main results were:

- There is an increasing demand on organic products in the different European markets – primarily in the EU
- The price level on organic trout products were on average 30 % higher than for conventional trout products
- Denmark is among the biggest producers of organic trout in the world and in the EU
- France can in the future be a threat to the Danish organic trout products on the German market, due to its high production rate
- Further increase of the Danish production of organic trout, will benefit the regularity of products.

Ref: Larsen, E.P., DTU Aqua, Larsen, V.J, Dansk Akvakultur, Åris, M., MAA.C og Gemba Seafood Consulting A/S (2017): Analyse af markedsmuligheder for økologisk ørredprodukter på det danske, tyske, østrigske, schweiziske og franske marked. ICROFS-ORGANIC RDD 2/RobustFish, Deliverable D6.5.1.

Different Danish organic trout products. Foto: Villy J. Larsen, Dansk Akvakultur

The overall conclusion:

- **Positive market potentials for Danish produced organic trout at the European market place**
- **Price premiums on organic trout will sustain in the short run**
- **Specific segments of the consumers prefer organic salmonids**
- **Organic labels and information of animal welfare has a positive effect on the consumers preference**
- **German consumers have a positive attitude towards Danish production of organic trout and consider it trustworthy.**

Comments to the overall conclusion

All three approaches towards the possible future market for Danish produced organic trout are positive. Denmark is highly regarded as a reliable producer of organic products and among them organic trout. Besides the home market, the German and Austrian markets are the most promising market places. The price premium for organic trout is between 25 % to 35% higher than the non-organic products.

The Danish production of organic trout have over the last decade been growing from nearly nothing to more than 1200 tons, but have the last year dropped back again - below 1.000 tons. There are several reasons for this drop, but with a production that low, the annual production is very exposed to change in production sites and substitutes to help conventional fish farmers to change to organic production.

As the development in the Danish organic production is by now, it will be difficult to reach the 2020 goal of a total production of 2.000 tons.

There are exports of small organic trout – fingerlings – to other European countries, and in light of the Danish expertise in producing small trout; it is possible that this export will grow in the future.