



Global trends in aquaculture

Innovative technologies in aquaculture

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What is the demand for aquaculture products on the European market?

It is difficult to give a clear answer during the **COVID-19 pandemic situation.....**

1. Fish and seafood consumption in EU ranges from c. 5 kg (Hungary) to almost 60 kg (Portugal).
2. Many major seafood-consuming European countries (Southern Europe) have been hit by COVID-19.
3. **Importing countries** and companies are suffering a lot from COVID as many businesses have closed down - **Transportation was limited as many borders were closed.**
4. The seafood processing sector has been also affected, as **factories reduced their working capacity due to social distancing measures.** This has an effect on the imports of raw material from exporting nations.

BUT:

1. In some countries, the sale of fresh fish has declined, but **purchases of ready-to-use and packaged fish have increased.**
2. In others, **consumption of fish products is increasing as people have more time to cook at home during the quarantine.**



Two thirds of the fish consumed in Europe is imported

Table 1. Rankings by aquaculture production quantity, excluding aquatic plants, in 1970 and 2016.

1970	2016
1. China	1. China
2. Japan ^a	2. India
3. United States ^a	3. Indonesia
4. Spain ^a	4. Vietnam
5. India	5. Bangladesh
6. Indonesia	6. Egypt
7. France ^a	7. Norway ^a
8. Philippines	8. Chile
9. Netherlands ^a	9. Myanmar
10. Thailand	10. Thailand
11. South Korea	11. Philippines
12. Soviet Union ^a	12. Japan ^a
13. Taiwan	13. Brazil
14. Vietnam	14. South Korea
15. Bangladesh	15. Ecuador
16. Malaysia	16. United States ^a
17. Italy ^a	17. Iran
18. Germany ^a	18. Nigeria
19. Hungary ^a	19. Spain ^a
20. Romania ^a	20. Taiwan
Share in developed countries: 41.2%	5.6%

^aIndicates an economically developed country (Data from FAO 2018a).

Garlock et al. 2020 in Reviews in Fisheries Science & Aquaculture



Southern Europe: Europe's biggest consumer and producer

Figure 3: Europe's top importers from developing countries
value in €'000

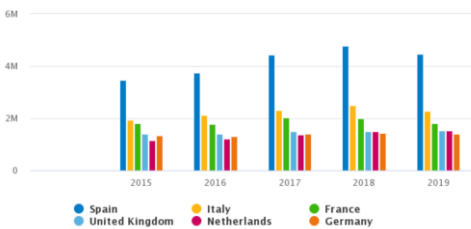
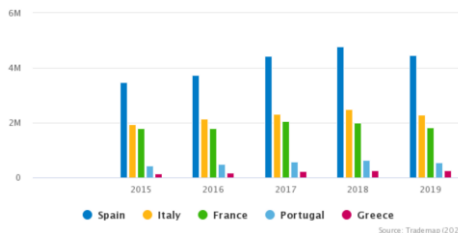


Figure 4: Export from developing countries to the main markets of Southern Europe
value in €'000

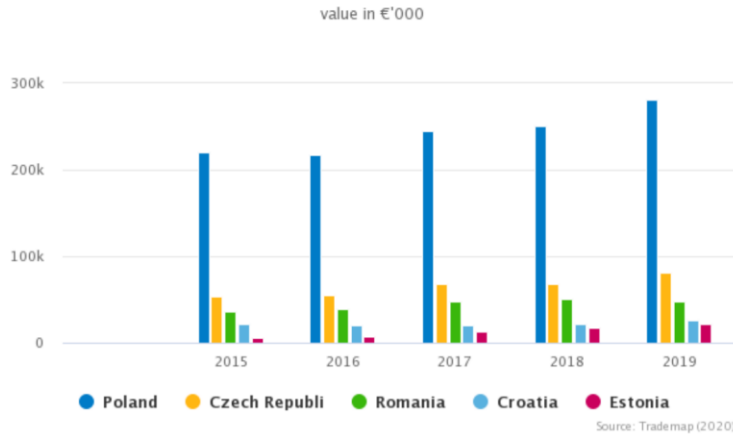


<https://www.cbi.eu/market-information/fish-seafood/what-demand>



Eastern Europe: a smaller but growing market

Figure 6: Export from developing countries to main markets of Eastern Europe



<https://www.cbi.eu/market-information/fish-seafood/what-demand>



Crustaceans

Crustaceans comprises 24% of Europe's total imports from developing countries. Crustaceans exported to Europe from developing countries include a variety of frozen products. The most important of which are **warm water shrimp (95%)**, rock lobsters (2.5%) and crab (1%).



<https://caughtonline.co.za/product/wild-caught-argentinian-prawns/>



Global trends in aquaculture – CRITICISM OF THE SECTOR

- pollution
- exploitation of the living resources
- quality of food from aquaculture
- wild stocks vs. farmed stocks
- fish welfare



North America, Latin America and the Caribbean, East Asia, Europe, Middle East and North Africa, South Asia, Southeast Asia, Oceania, Sub-Saharan Africa

Environmental Problems of Aquaculture

Aquaculture: are the criticisms justified? Feeding fish to fish



Summary

Aquaculture is a fast-growing sector of livestock production, but has attracted criticism owing to the practice of using marine ingredients as feed, usually in the form of fishmeal and fish oil. After placing so-called production of 'fed' aqua- culture within the global supply context of capture fisheries and aquaculture, the author lists the objections made against feeding fish to fish.

1317

by CJ Shepherd

13th June 2013

Demand for farmed fish causing wild fish stocks to collapse



Shoppers buying farmed fish, such as prawns and Scottish salmon labelled as sustainable in UK supermarkets may unwittingly be contributing to the collapse of fish stocks in Asia and Africa, a report has found.



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TOP 5 AQUACULTURE TRENDS OF 2020

Posted on [02/17/2020](#)

1. Climate Change-Resistant Mussels
2. Shift Toward Microalgae Oil
3. Kelp Farming
4. Increased Sea Urchin Production
5. Open-Ocean Aquaculture



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NEW TECHNOLOGIES

NEW SPECIES



Global trends in aquaculture – NEW TECHNOLOGIES

Floating Fish Farms?

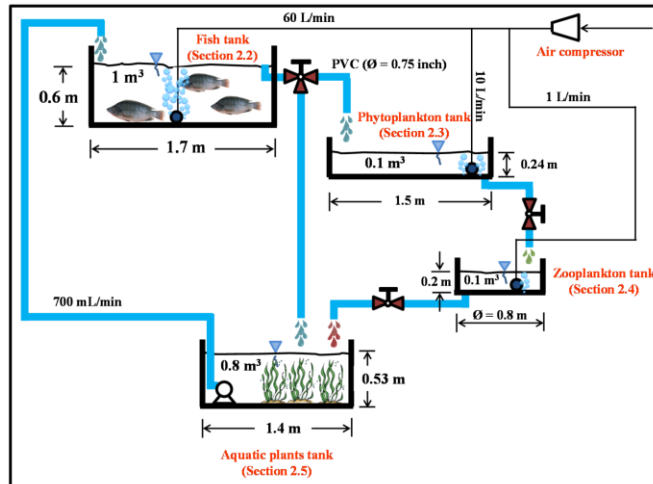


<https://www.stylus.com/fzjkkk>



Global trends in aquaculture – NEW TECHNOLOGIES

Integrated Multi-Trophic Recirculating Aquaculture System for Nile Tilapia (*Oreochromis niloticus*)

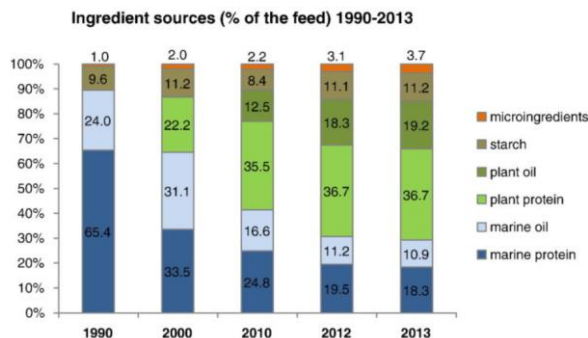


Puchong Sri-uam^{et al.} 2016 in Sustainability



Global trends in aquaculture – FISH FEEDING

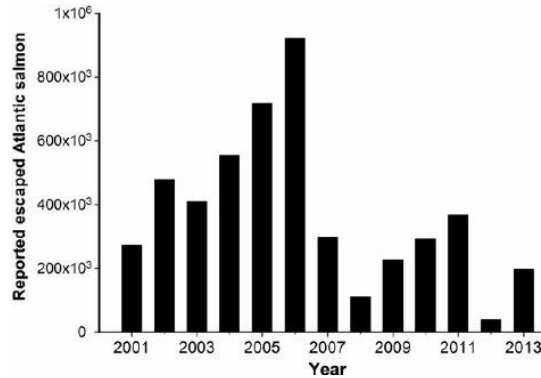
The evolution of fish feed ingredients: The transition to plant-based raw materials in fish feeds



<https://www.luke.fi/aquaimpact/2019/12/20/the-evolution-of-fish-feed-ingredients-the-transition-to-plant-based-raw-materials-in-fish-feeds/>

Global trends in aquaculture - FISH GENETICS AND REPRODUCTION

Fish escapes from the farms - Fish sterilisation due to triploidization vs. CRISPR technique



The number of farmed salmon escapes reported to the Norwegian Directorate of Fisheries by fish farmers for the period 2001–2013. Data were taken from the Norwegian Directorate of <http://www.fiskeridir.no/>.



Global trends in aquaculture - FISH GENETICS AND REPRODUCTION

Monosex stocks of fish:

- 1.all-female (rainbow trout)
- 2.all-male (tilapia)

Who's next....



Global trends in aquaculture – any space for NEW SPECIES?

Table 4: Top 10 species groups by value in world aquaculture, 2017

Top 10 species groups		World aquaculture (2017 value)			
Species group	ISSCAAP division	Number of ASFIS species items in the group farmed in global aquaculture	Number of countries farming the species group	World production value of the species group (farmgate; USD 1 000)	Share of world production value of all species (%)
1. Carps, barbels and other cyprinids ¹	Freshwater fishes	38	92	61 437 284	24.62
2. Marine shrimps and prawns ²	Crustaceans	14	60	34 220 879	13.71
3. Salmon, trouts, smelts ³	Diadromous fishes	20	83	22 310 102	8.94
4. Tilapias and other cichlids ¹	Freshwater fishes	18	127	11 031 140	4.42
5. Catfishes ³	Freshwater fishes	27	86	10 569 972	4.24
6. Crayfishes ⁴	Crustaceans	7	15	10 008 865	4.01
7. Clams, cockles, arkshells ¹	Molluscs	29	21	9 779 660	3.92
8. Freshwater crabs ⁵	Crustaceans	1	3	9 540 416	3.82
9. Freshwater perch-like fishes ⁶	Freshwater fishes	9	30	7 110 761	2.85
10. Oysters ¹	Molluscs	12	44	6 788 868	2.72
Other species		n.a.	n.a.	66 781 214	26.76
All species		424	196	249 579 163	100.00

Data source: FAO Global Fishery and Aquaculture Production Statistics 1950–2017 (v2019.1.0), published through FishStatJ (March 2019). Available at www.fao.org/fishery/statistics/software/fishstatj/en.



Global trends in aquaculture – NEW SPECIES

Any space for new species?

NEWS
ABOUT DIVERSIFY
SCIENTIFIC ARTICLES
DISSEMINATION
INTRA

NEWS

The project was completed in November 2018, but the site will remain open and updated continually with relevant information.

Here you can find the most up-to-date general-audience information on the project

Contact Dissemination Coordinator

New species for EU aquaculture





Mostly marine aquaculture species

MEAGRE (*ARGYRO SOMUS REGIUS*)

GREATER AMBERJACK (*SERIOLA DUMERILI*)

PIKEPERCH (*SANDER LUCIOPERCA*)

ATLANTIC HALIBUT (*HIPPOGLOSSUS HIPPOGLOSSUS*)

WRECKFISH (*POLYPRION AMERICANUS*)

GREY MULLET (*MUGIL CEPHALUS*)



Global trends in aquaculture – OLD BUT NEW - STURGEONS



THE CAVIAR MARKET

Production, trade and consumption
in and outside the EU



Global trends in aquaculture – FISH PROCESSING INDUSTRY

Caviar production and sturgeon aquaculture

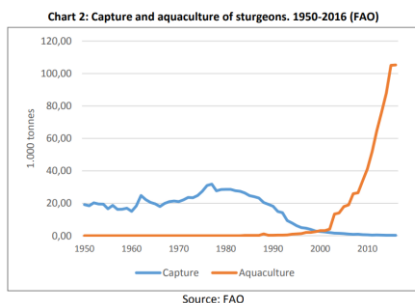


Table 1: Caviar production by MS (tonnes)

Country	2015	2016
Italy	35	38
France	23	30
Germany	17	15
Poland	10	15
Bulgaria	6	7
Spain	4	6
Finland	4	4
Belgium/Luxembourg	3	3
Hungary	2	3
Latvia	2	3
Netherlands	2	2
Total EU	108	126

Source: FEAP



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