Greek Organic Aquaculture – FutureEUAqua results

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.... solutions / advice

Eat more fish

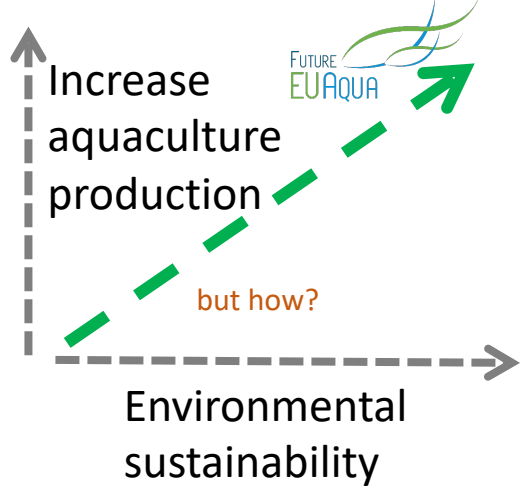
Buy from sustainable production only

Buy eco-labelled products
Buy only organic

Food losses and food waste to be reduce

Regional products only locally produced

Agriculture and aquaculture play a key role in meeting the EU's ambition for **a carbon neutral Europe by 2050** by reducing greenhouse gas emissions. **Organic farming** uses a number of management practices that contribute to climate change mitigation, with additional benefits for the environment and biodiversity.



Oct 2014 – Recommendation of the COMMITTEE ON WORLD FOOD SECURITY:

"Make **fish a** visible, integral element in **food security and nutrition strategies,** policies and programs ….."

European Commission 2022:

…….promote **sustainable aquaculture practices such as organic production.**

What should be the long term goals?

Organic production as a system of farm management and food production

Organic production in the 21st century

Farmed Organic production (%)	Country
6.5	Hungary
8.1	France
9.7	Germany
10.9	Denmark
11.0	Greece
15.8	Italy
25.1	Austria

With the European Green Deal the farm to fork strategy and the biodiversity strategy the EU has set targets of reaching **at least 25% of the EU's agricultural land under organic farming by 2030** and significantly increasing organic aquaculture

The organic production method plays a dual societal role, where it on the one hand provides for a specific market responding to a consumer demand for organic products, and
on the other hand, delivers public goods contributing to the protection of the environment and animal welfare, as well as to rural development.

European Organic aquaculture

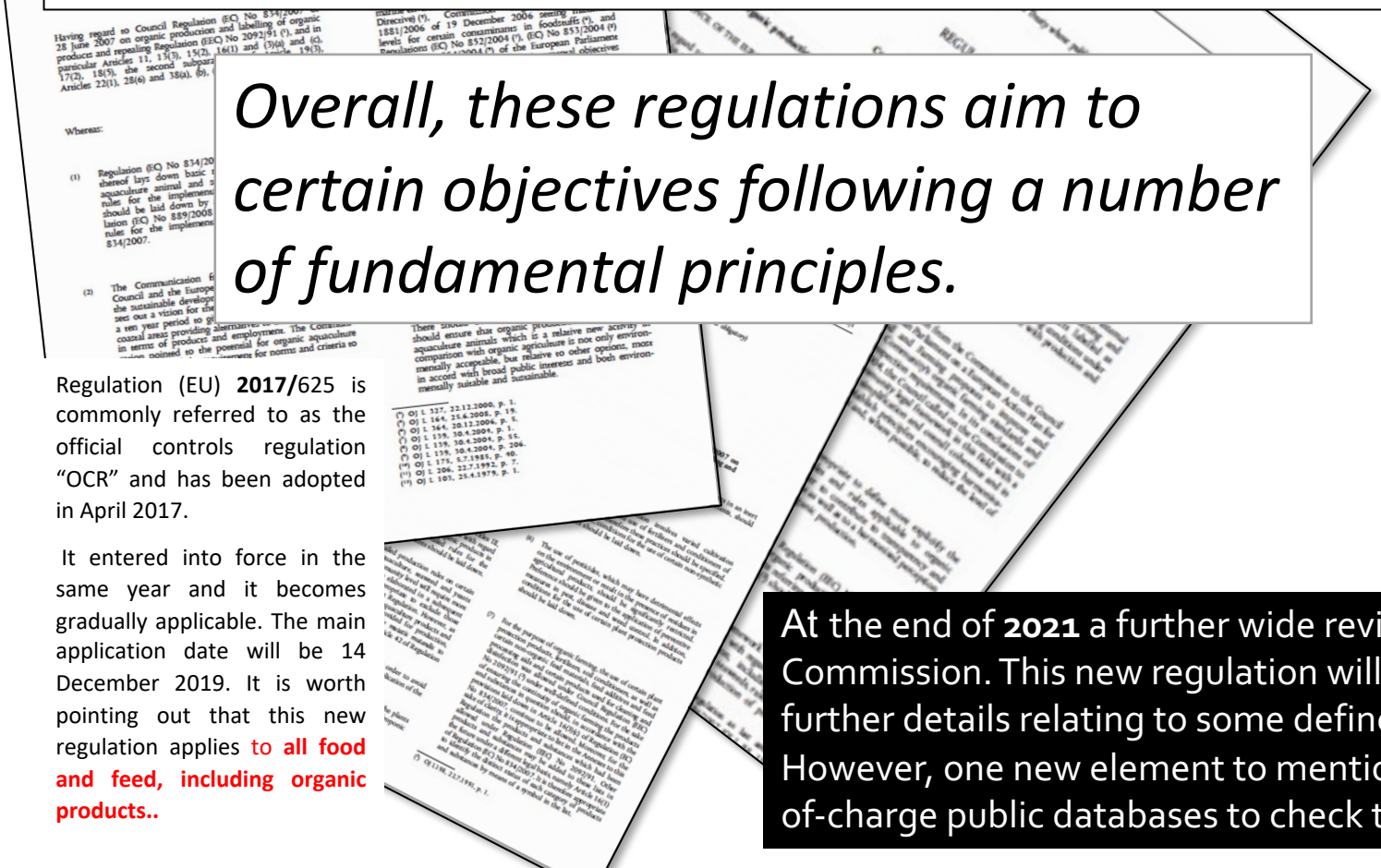
The organic aquaculture sector has developed rapidly but has been **constrained** by a number of factors

- ***Sourcing and certifying organic juveniles***
- ***Availability and cost of suitable organic feeds***
- ***Conditions of broodstock management***
- ***High inspection and certification costs and the associated administrative burdens***
- ***Markets***
- ***Veterinary and parasite treatments***

Organic aquaculture regulation

Organic fish feed is currently produced according to the EU regulations 834/2007, 889/2008, 710/2009, 1358/2014, 673/2016, 848/2018.

Commission Regulation (EC) No 710/2009 5 Aug 2009
[…] laying down detailed rules on organic aquaculture animal and seaweed production
Official Journal of the European Union



Overall, these regulations aim to certain objectives following a number of fundamental principles.

Regulation (EU) **2017/**625 is commonly referred to as the official controls regulation "OCR" and has been adopted in April 2017.

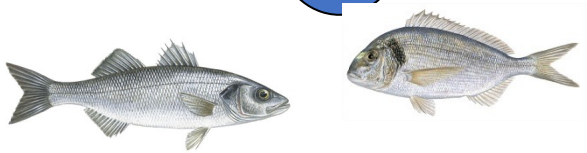
It entered into force in the same year and it becomes gradually applicable. The main application date will be 14 December 2019. It is worth pointing out that this new regulation applies to **all food and feed, including organic products..**

AIM:

Tailored-made, species-and-life stage specific regulation based on research results

At the end of **2021** a further wide revision of the organic regulations was announced by the Commission. This new regulation will entry into force from 1st **January 2022** also provides that further details relating to some defined subjects will be issued with specific delegated acts. However, one new element to mention is the obligation for Member States to establish a free-of-charge public databases to check the availability of organic juveniles at national level.

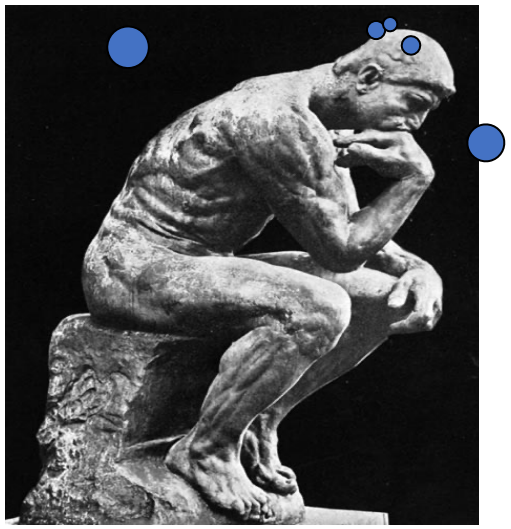
Organic fish feeds Novel ingredients technology



FutureEUAqua and organic aquaculture

Environmentally sound organic aquaculture

Consumers acceptance in organic aquaculture



Animal welfare in organic aquaculture

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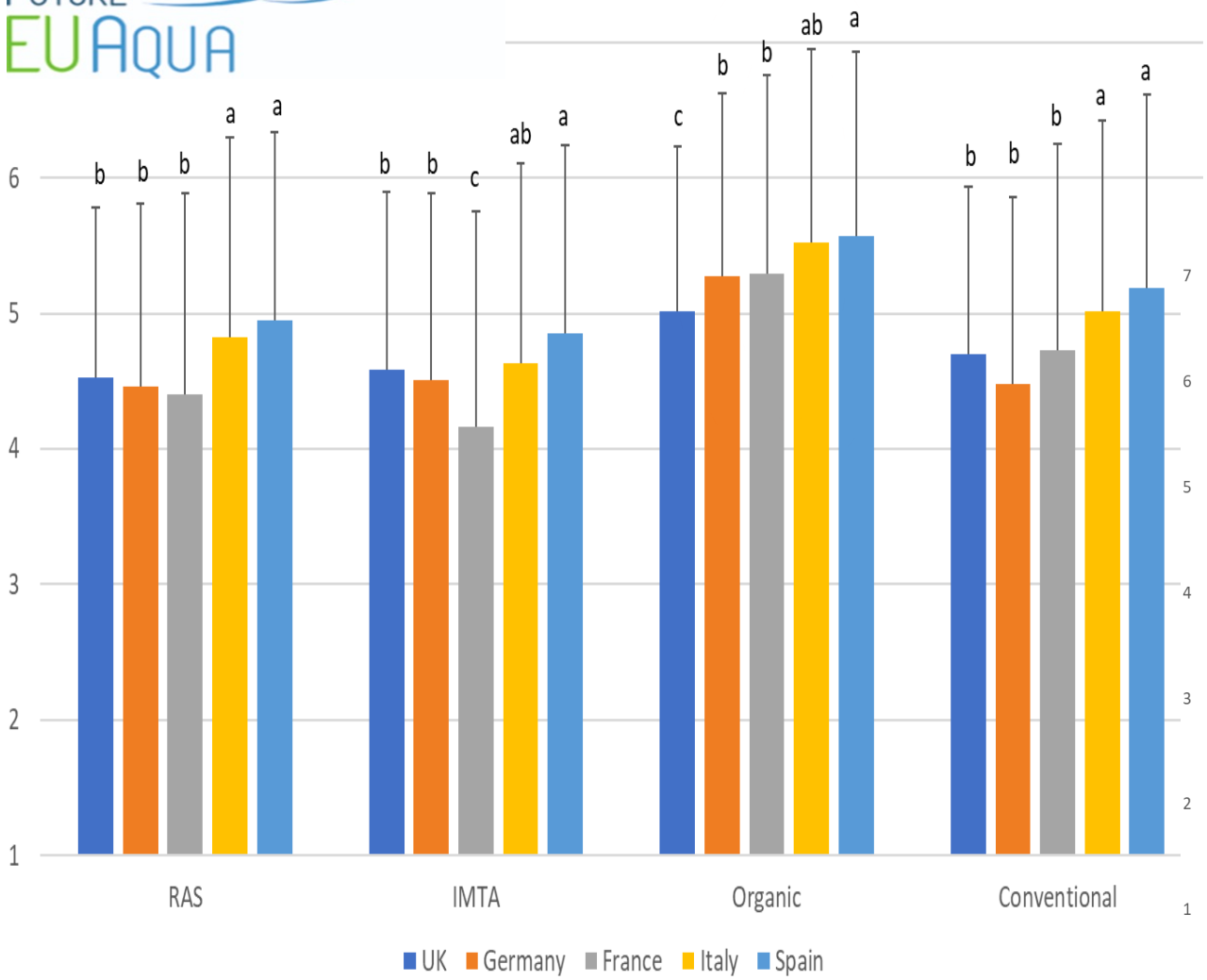
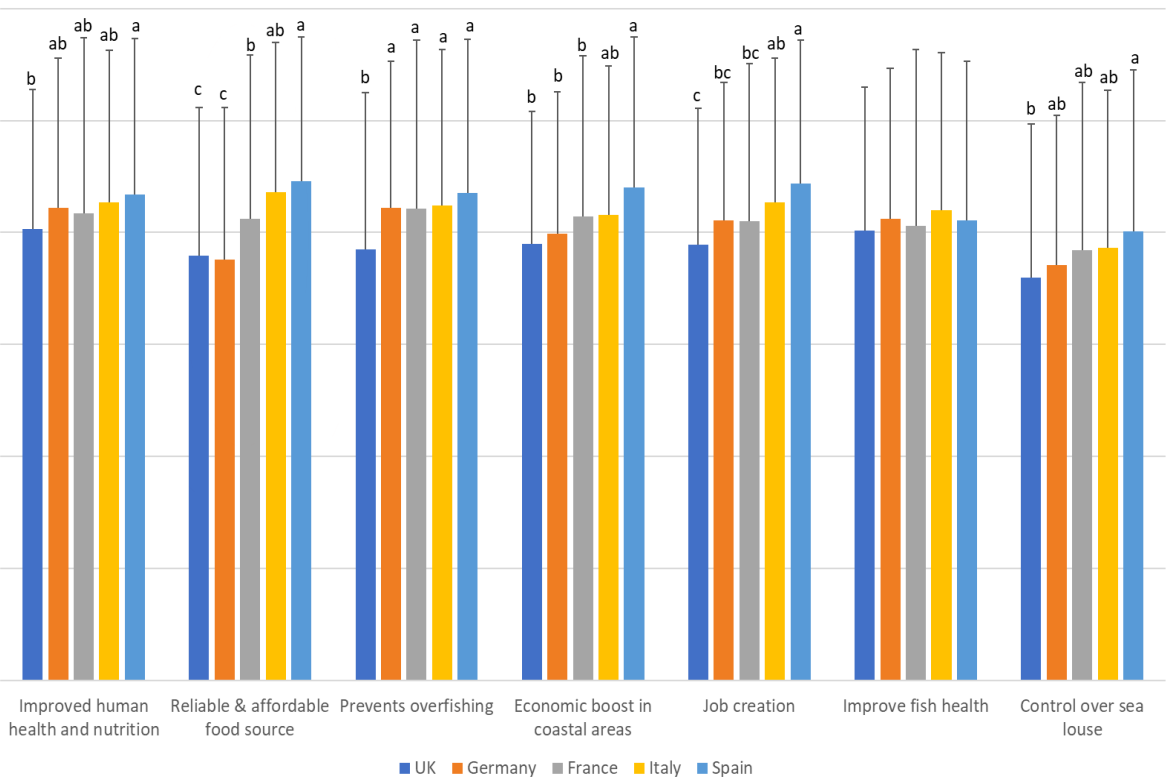
European research and innovation that, while achieving the research needed, provides the base necessary for knowledge management for organic aquaculture in the future.

Consumers attitude



Consumer attitude towards aquaculture production systems in five European countries.
Scale: 1 = Very negative and 7 = Very positive

Consumer perception of benefits related to organic aquaculture production systems in five European countries.
Scale: 1=No benefits, 7=Major benefits

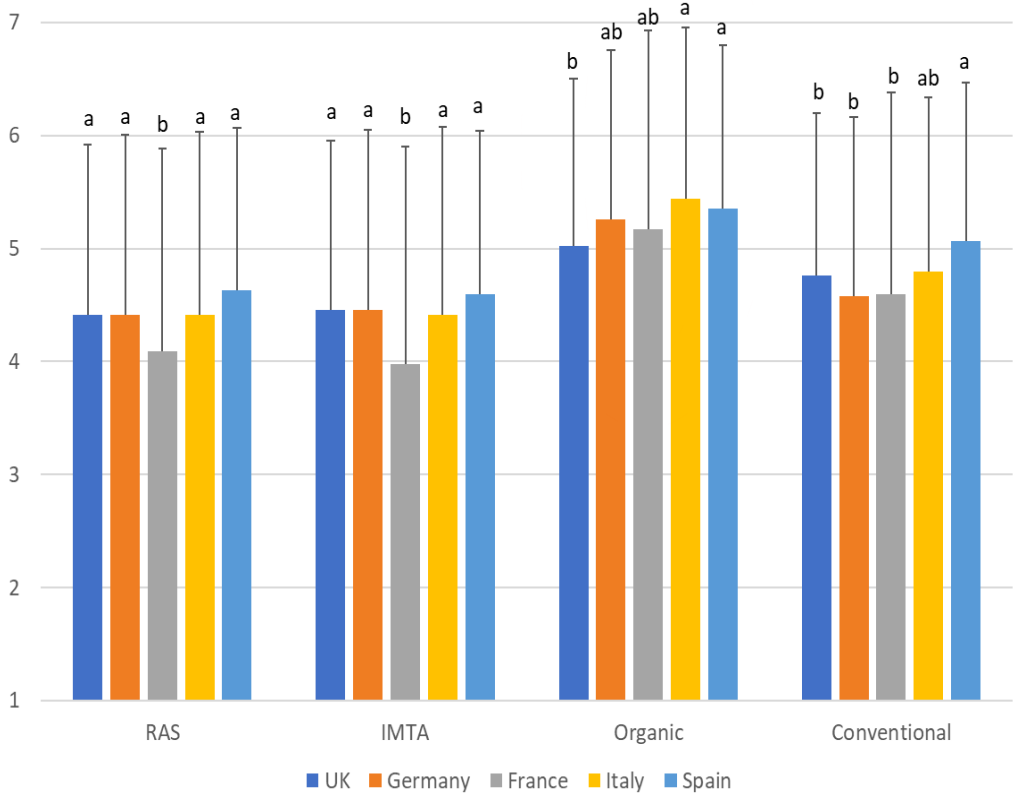


Themistoklis Altintzoglou, Pirjo Honkanen (NOFIMA)

Consumers attitude

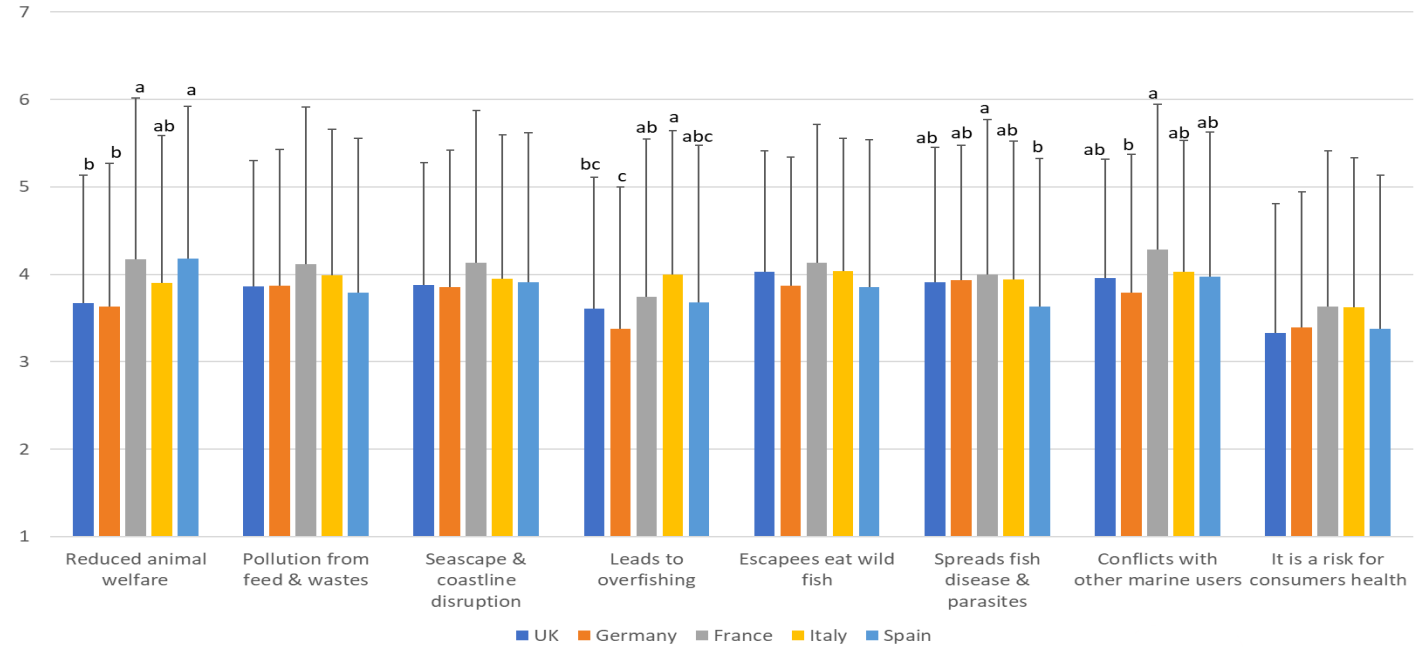
Themistoklis Altintzoglou, Pirjo Honkanen (NOFIMA)

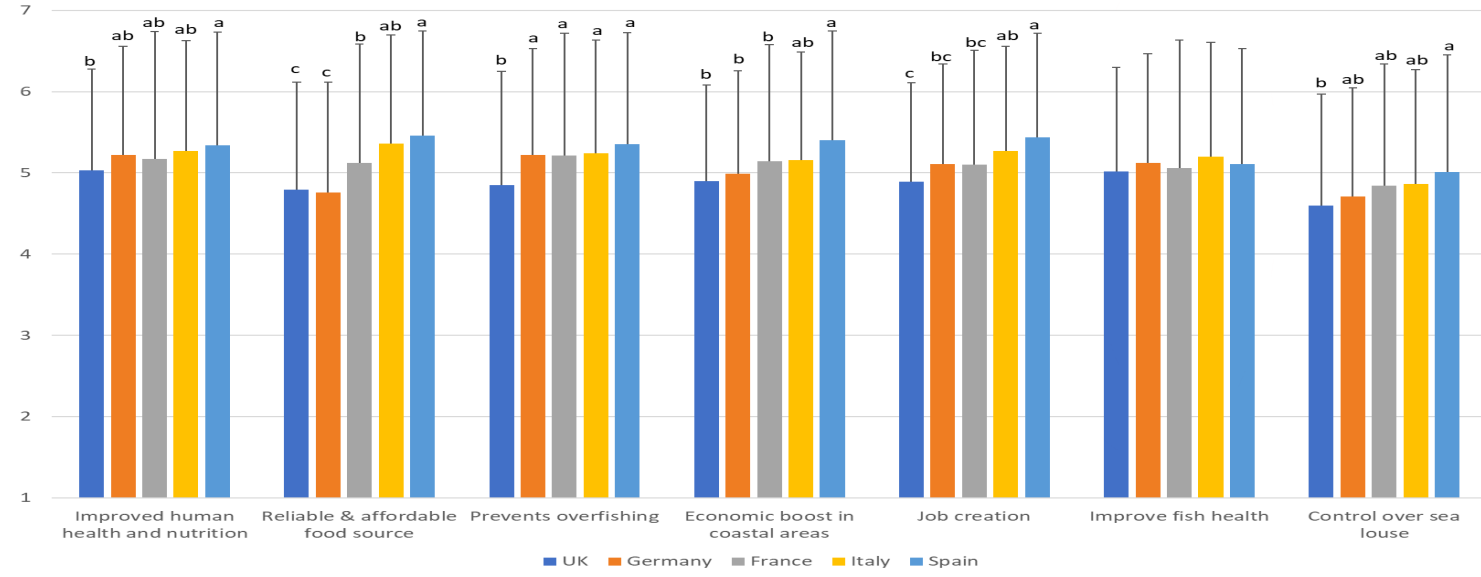
Consumer willingness to buy products made in aquaculture production systems in five European countries.
Scale: 1=Definitely not, 7= Definitely yes



Consumer perception of negative impacts related to organic aquaculture production systems in five European countries.

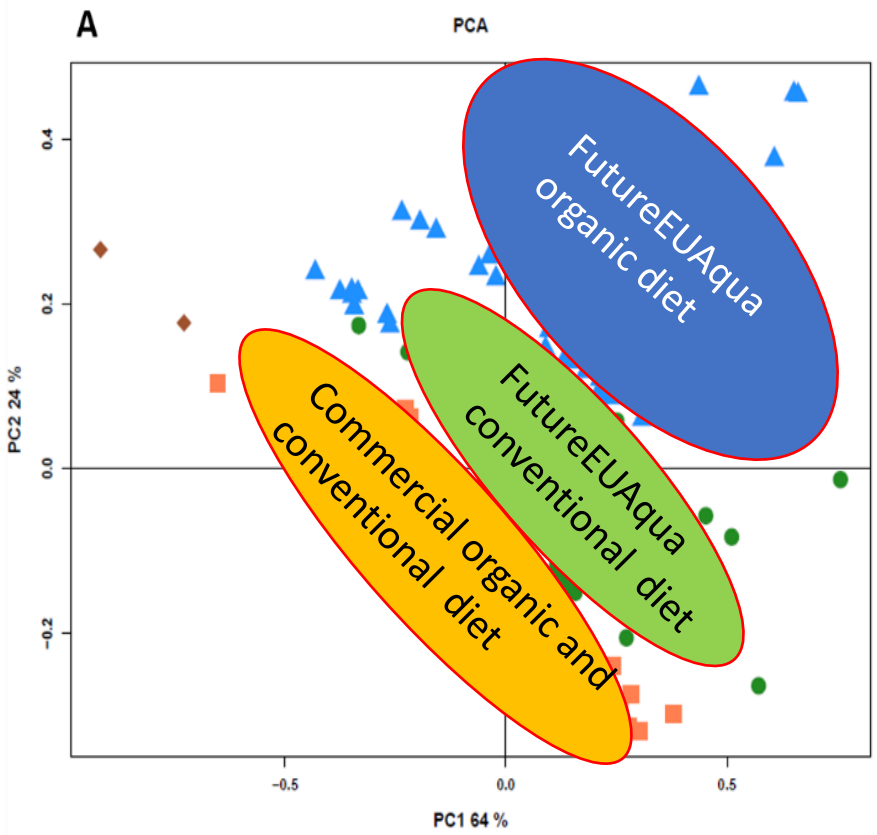
Scale: 1=No impact, 7=major impact





Fish metabolome

Gianfranco Picone and Francesco Capozzi (UNIBO)



-There is no difference between the two commercial diets.

-FutureEUAqua organic diet modify fish metabolome in a different way

Aquafeeds-Sourcing

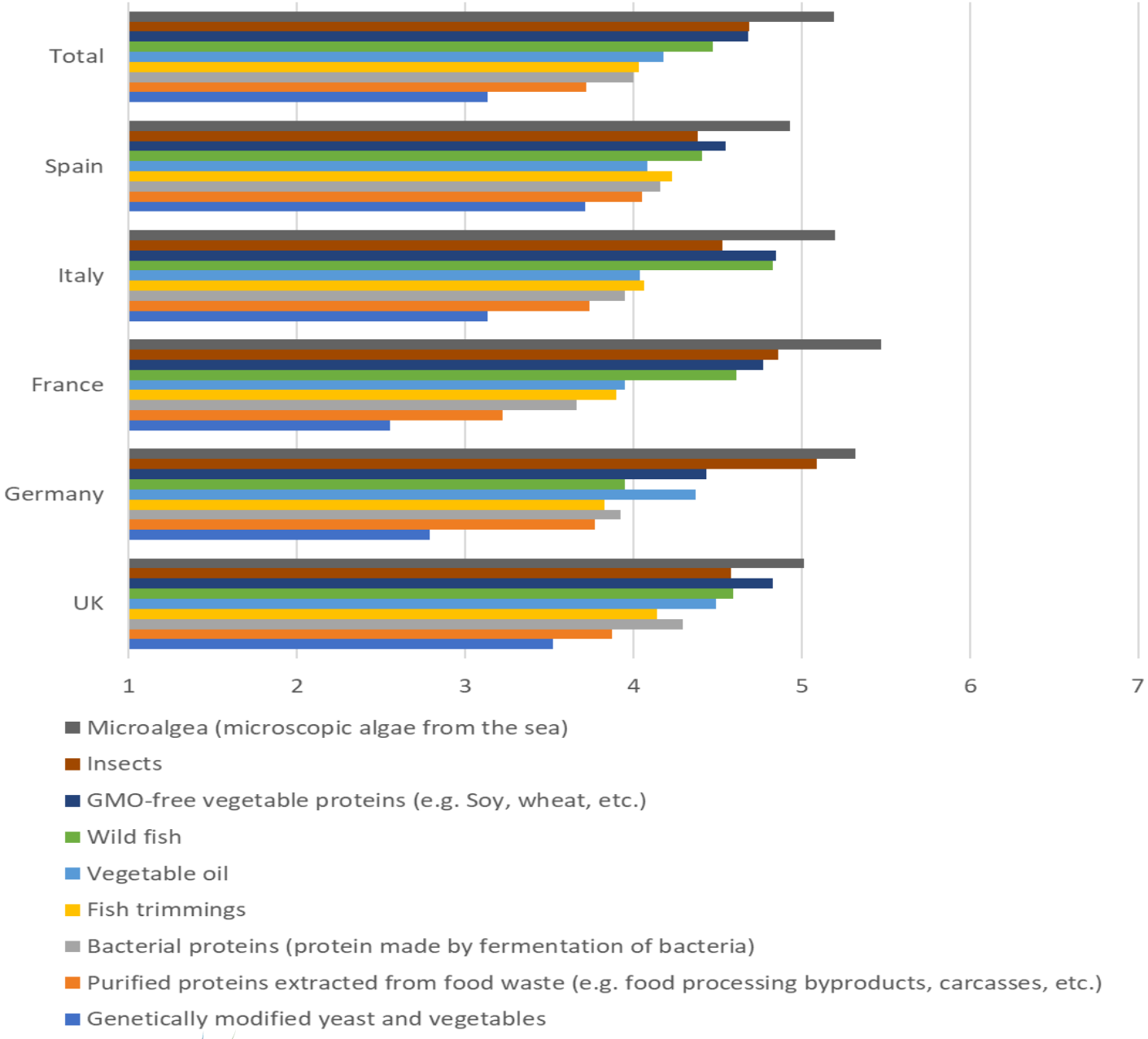
40 essential nutrients

Biotechnology

microalgae

Bacterial protein

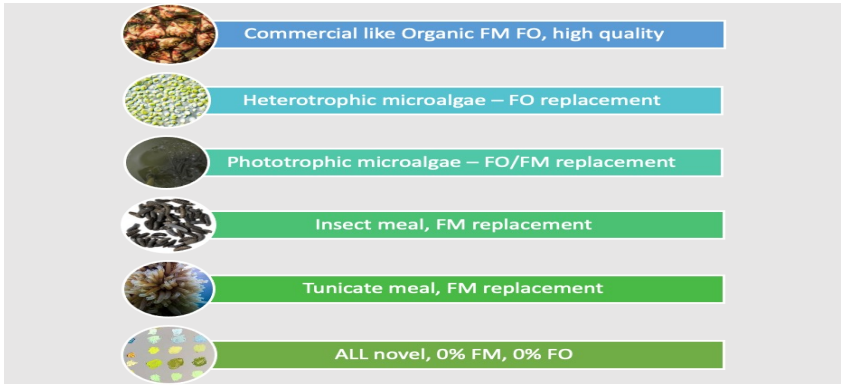
yeast

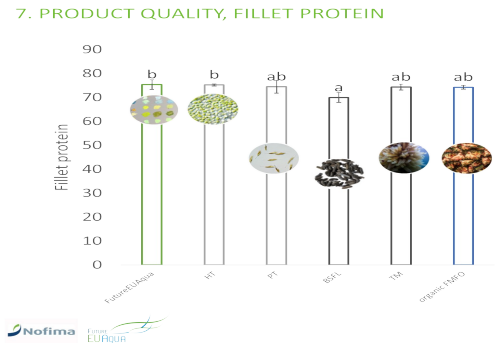


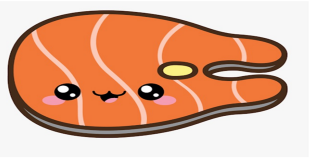
Themistoklis Altintzoglou, Pirjo Honkanen (NOFIMA)

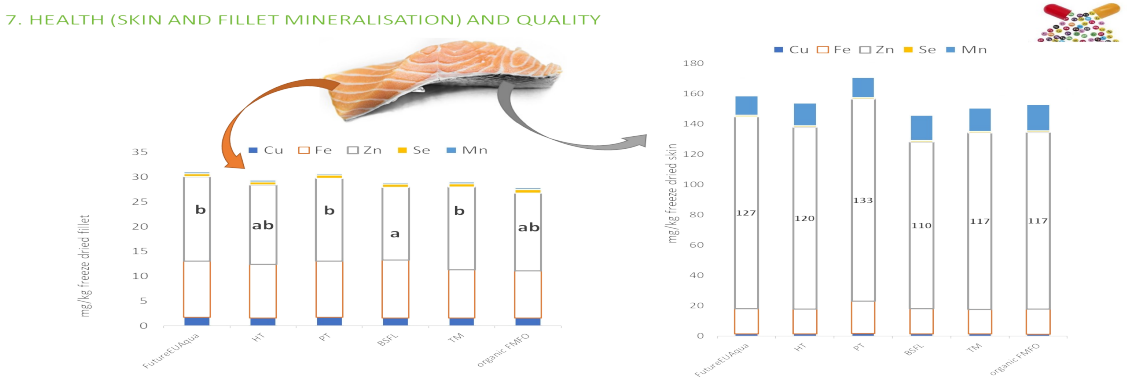
Katerina Kousoulaki, Sveen, Krasnov, Johansson, Noren, Richardson, Espmark

Ivar Lund, Alfred Jokumsen, Manuel Gesto (DTU)









Organic trout farming

Fish meal protein concentrate processed from trimmings

Why ?

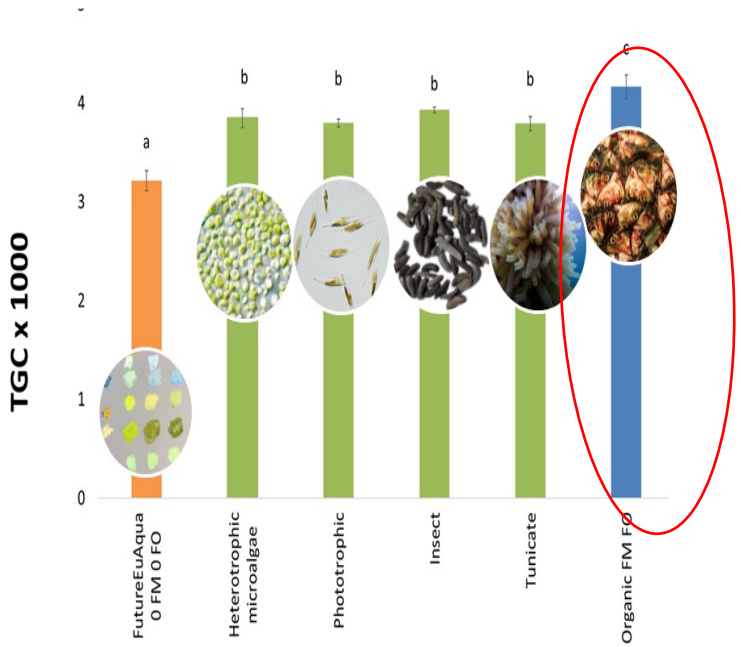
Traditional fish meal or fish trimmings has an environmental draw back with a high phosphorus (P) content.

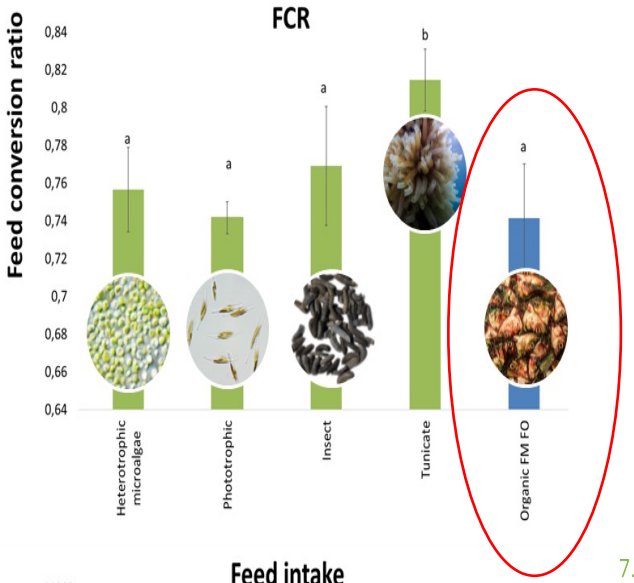
New technology has developed this type with low P content and high protein content **(>80 % protein)** - thus allowing high protein and high energy – not common in organic diets.

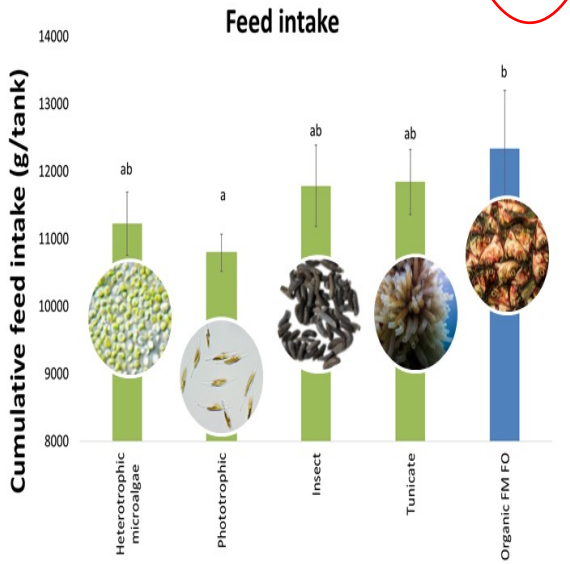
There were no significantly differences in SGR, FCR between diets.

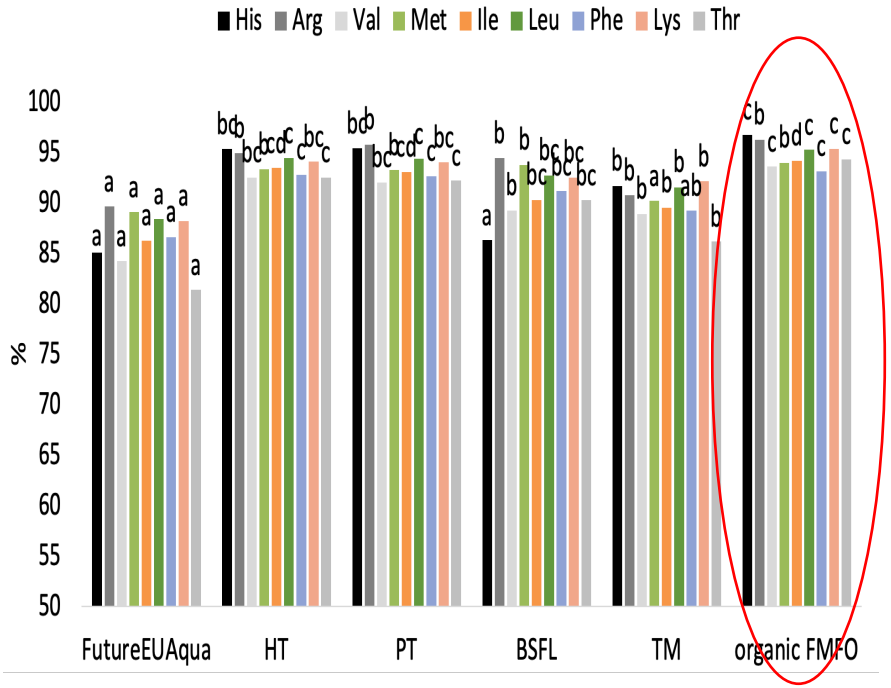
7. FISH PERFORMANCE

Kousoulaki, Sveen, Krasnov, Johansson, Norén, Richardson & Espmark

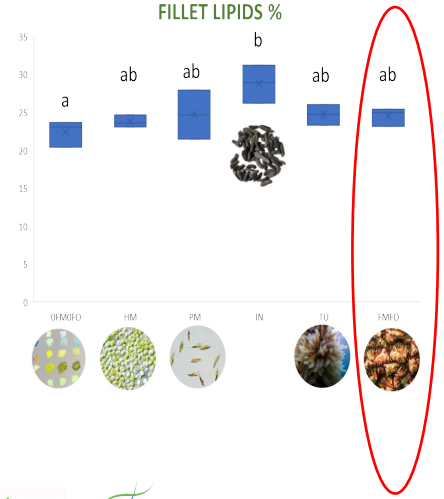


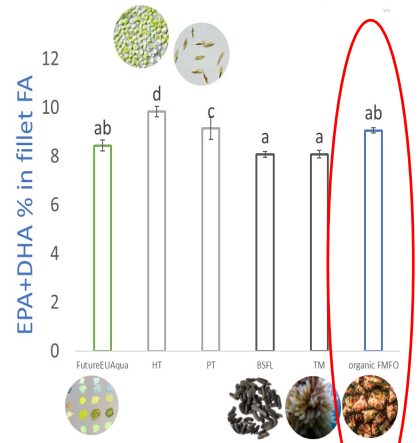






7. LIPID/ENERGY METABOLISM AND PRODUCT QUALITY





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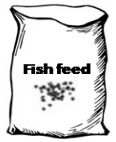
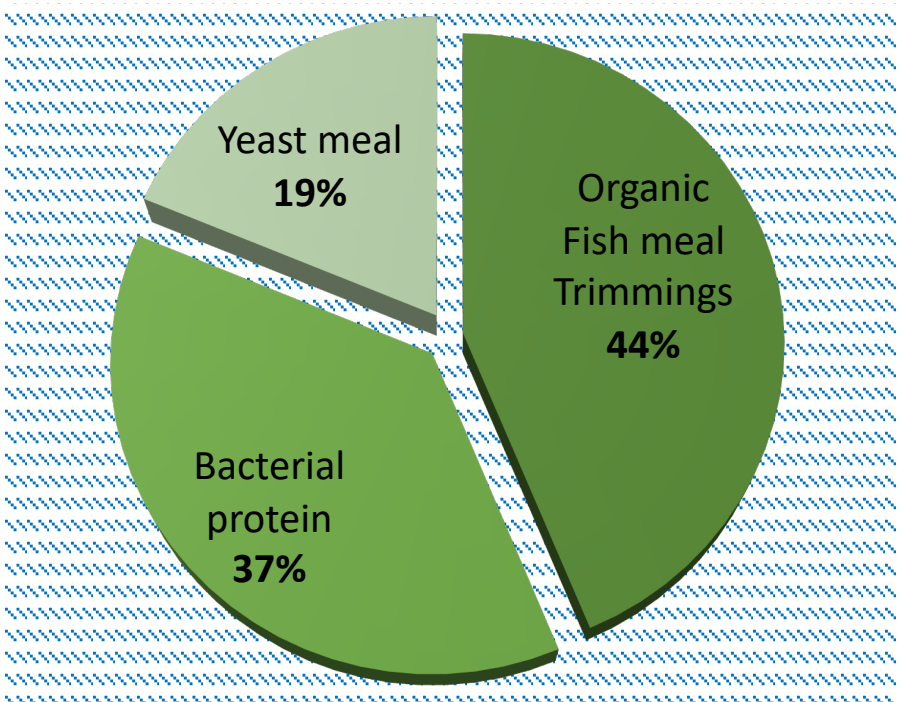
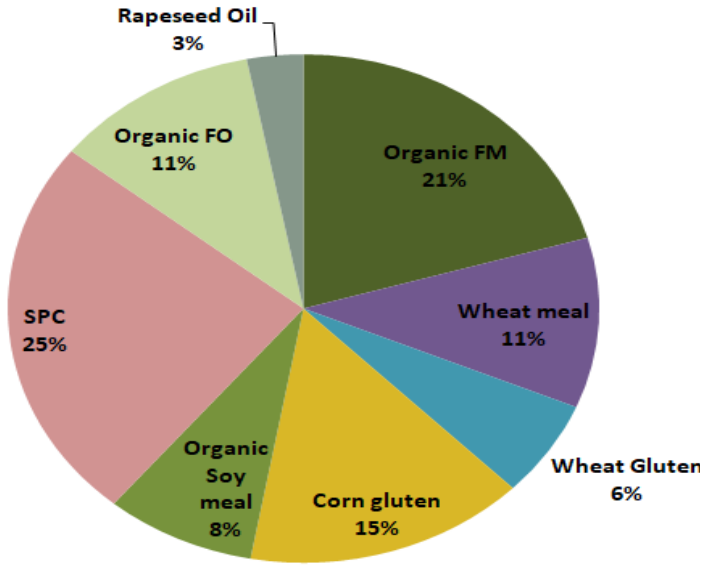
Anna Tampou (UTH), Antigoni Vasilaki, HCMR)
Ioannis Nengas (HCMR) Elena Mente (AUTH)



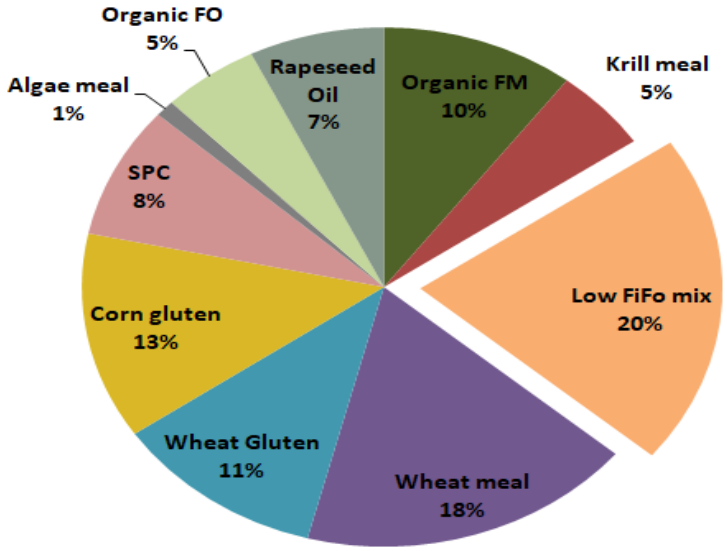
Diet 1 0% Low FiFo
Diet 2 20% Low FiFo
Diet 3 25% Low FiFo
Diet 4 30% Low FiFo

Low FiFo for organic diets

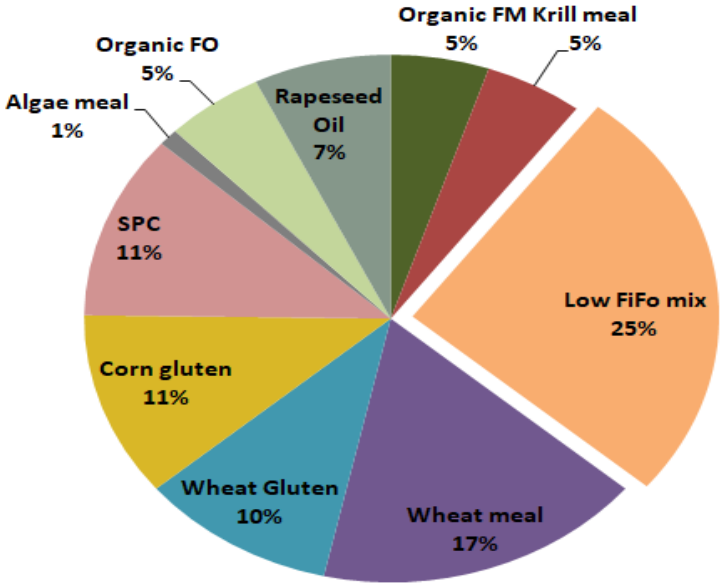




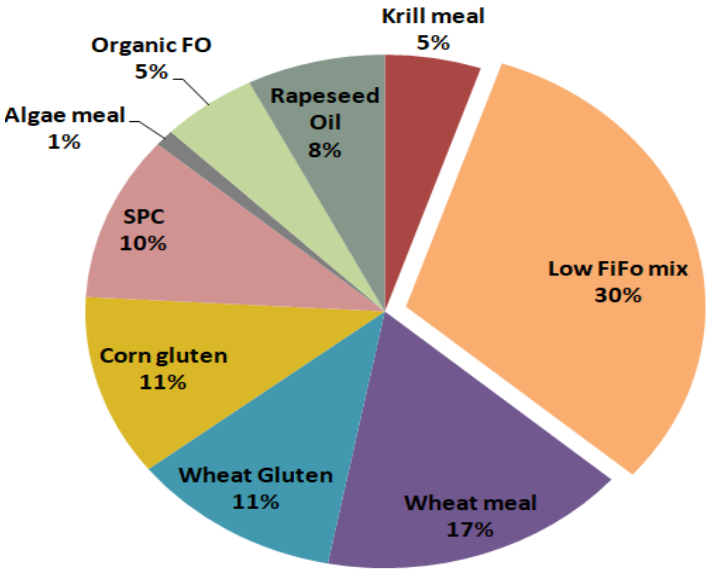
Diet 1



Diet 2



Diet 3



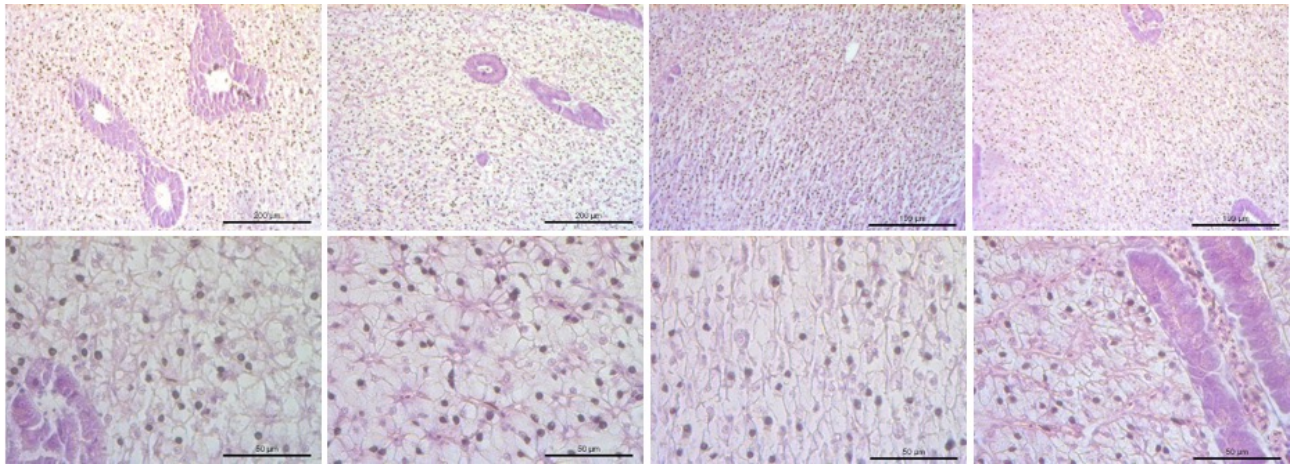
Diet 4

Health evaluation

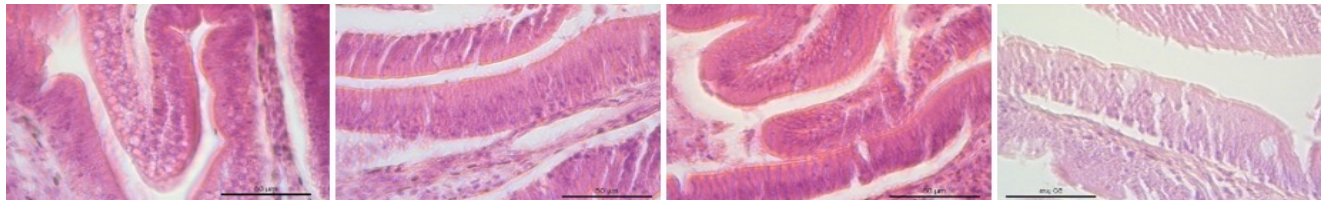
Anna Tampou (UTH), Antigoni Vasilaki, HCMR)
Ioannis Nengas (HCMR) Elena Mente (AUTH)

Growth evaluation

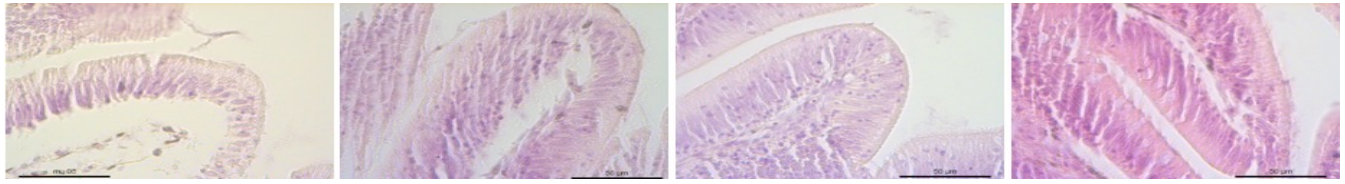
Higher growth performance for LFiFo25 diet compared to control diet



Liver in control diet appears to have normal structure, but in replacement diets there is a slight nuclei displacement due to lipid droplets.



Anterior gut appears to have normal structure in all dietary groups with normal distribution of goblet cells.



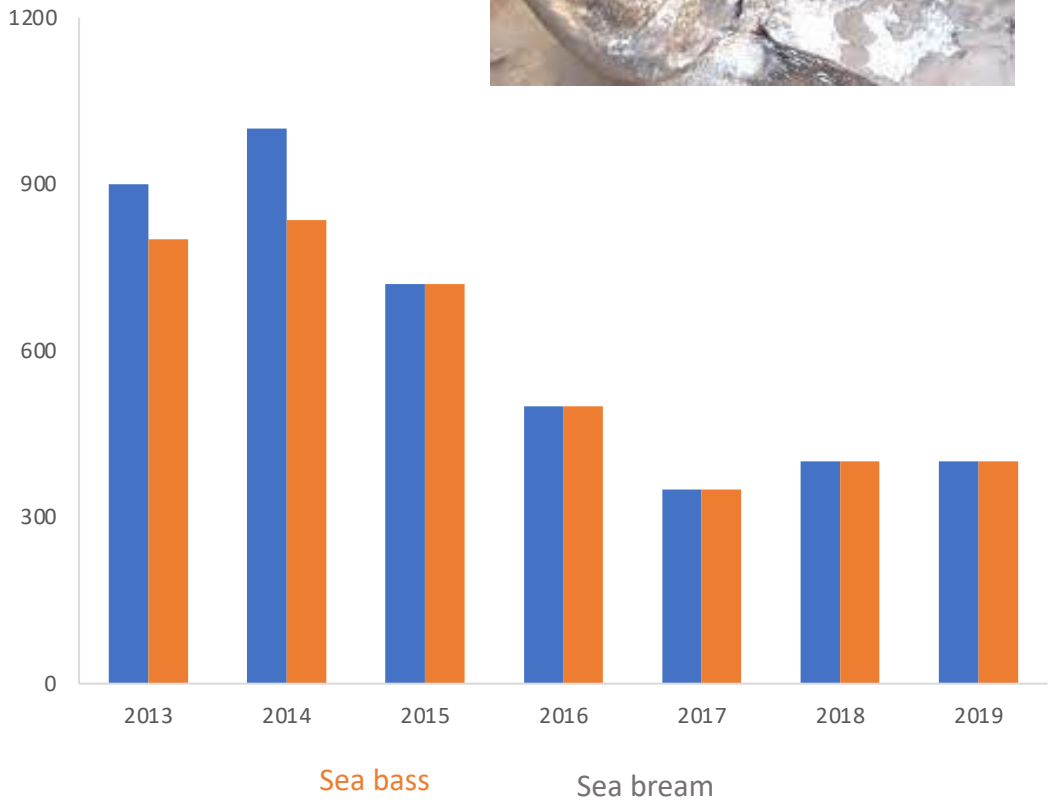
Posterior gut appears to have normal structure in all dietary groups with normally distribution of goblet cells. There are no signs of inflammation.

Greek organic aquaculture

- 60% more expensive than conventional.
  e.g. Sea bream: 8.5€/kilo organic – 4.98 €/kilo conventional

- There only two fish farms that are certified for organic sea bream and sea bass in Greece (Galaxidi marine farms and Kefalonia fisheries).

Together they produce 400 tones of sea bream and 400 tones of sea bass.



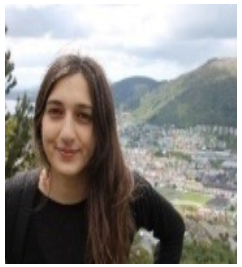
EUMOFA, 2017

- For 2020, the 800 tonnes of organic sea bass and sea bream represent only the 0,7% of the total production of the two species.

- Only 62% of the 800 tonnes were sold as organic, while the rest was sold as conventional.

Greek organic aquaculture

Sustainable, productive, climate-resilient, healthy, organic sea bream/sea bass aquaculture farming system to provide consumers with affordable, safe, traceble food while minimizing pressure on the aquatic ecosystem and restoring and enhancing biodiveristy



Kefalonia Fisheries

Galaxidi Marine farm

Thank you