Factsheet

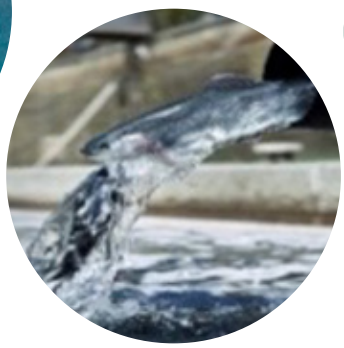
Challenges and solutions for more sustainable aquaculture feeds

With a continuous need for food, aquaculture provides a solution to increase the food production of the world. Safe, sustainable, and efficient use of new aquafeed ingredients is one of the key goals of the FutureEUAqua project.

The **FutureEUAqua** project tested the performance of farmed Atlantic salmon, Rainbow trout, and European sea bass and Gilthead sea bream fed tailor-made diets. The traditional diets were replaced by novel low trophic ingredients with lower carbon footprint. This is to ensure high fish performance, high nutritional quality and safety for conventional and organic aquaculture.

Photo 1: FutureEUAqua tested fish species.

Atlantic salmon (Nofima)



European sea bass (HCMR)

Rainbow trout (DTU)

Gilthead sea bream (UTH)

Challenge: to attain sufficient protein and omega-3 sources

Solution 1: New marine omega-3 sources: A new marine omega-3 source for aquafeeds could be microalgae filter feeding tunicates (Ciona intestinalis), (Photo 2). They build a fatty acid profile very similar to that of fish oil. The scientists of FutureEUAqua also tested different microalgae products with high amounts of essential long chain omega-3 fatty acids.

Solution 2: Novel protein sources: Black soldier fly larvae meal, bacterial- and yeast protein, fermented soy- and rapeseed meal, tunicate meal, fish meal trimmings with and without bones and krill products are among the protein rich low trophic raw materials tested in FutureEUAqua aquafeeds.

Do they work? The novel ingredients tested were well accepted by the fish, sustaining high growth rates and feed efficiency in all species tested. Fish showed good gut health and normal metabolic responses. The use of fish meal with low levels of phosphorous (i.e., from fillet trimmings of cod) in aquafeeds for rainbow trout revealed, that this can be an effective way to reduce phosphorus discharge (i.e. reduce environmental pollution) in organic trout farming without compromising fish growth.

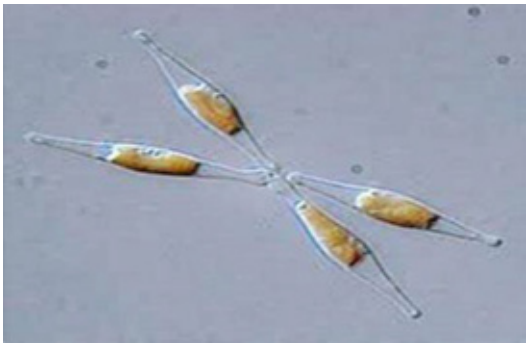
A trend was observed for higher final weight, improved feed conversion ratio and protein digestibility by moderate inclusion of novel ingredients in conventional and organic diets for sea bream and sea bass. Gilthead sea bream fed with the microalgae diets enriched their gut micro-organisms that are known for their beneficial services to the fish.

Further research needs to improve some of the ingredients tested for trout and salmon (i.e. tunicate meal), as we observed a better growth performance with use of the fish meal and fish oil control diets. Some of the shortcomings of the new ingredients were lower protein digestibility and lower digestibility of some fatty acids and total lipids.

FutureEUAqua results fill knowledge gaps for responsible aquafeed growth and efficient use of the new aquafeed ingredients tested.

Photo 2: Novel future aqua feed raw ingrediets tested in FutureEUAqua.

Tunicate (Ciona intestinalis)



Microalgae (Phaeodactylum tricornutum)

Microalgae (Schizochytrium limacinum)

Read more on www.futureeuaqua.eu

Contacts:

Elena Mente
Professor
ementе@vet.auth.gr

Oda Bjørnsborg
EU Communication Officer
oda.bjornsborg@nofima.no
+47 404 84 930

Funded by:

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 817737