



GET TO KNOW THE MILLENNIAL SALMON PROJECT

Millennial salmon is a 4-year project (2021-2024) with world leading European organizations along the value chain of the salmon farming industry. The partners within R&D, feed and raw material producers and a retailer, aim to create a knowledge based sustainable salmon product that answers to modern Millennial principles of life, considering technoeconomic, animal welfare, environmental and societal aspects. In the project we will use Black Soldier Fly Larvae meal produced by Innovafeed and heterotrophic microalgae biomass produced by Corbion, producers that operate with minimum land and resource use compared to competing alternatives. Millennial salmon focuses on Life Cycle Assessment (LCA) of the proposed solutions which will provide a comprehensive figure on climate impact of the new technologies. The project concept is based on utilising efficient technologies such as fermentation and circular economy transformation of industrial side stream biomasses into microalgae and insects for a sustainable production of low trophic species as ingredients for aquafeed. DHA-rich *Schizochytrium limacinum* biomass combined with Black Soldier Fly Insect meal can satisfy large parts of the nutritional requirements of salmon in long chain $\Omega 3$ polyunsaturated fatty acids and high-quality proteins. This will allow for sustainable future growth in the salmon farming industry without the need of further deforestation or compromising wild fish biodiversity.

PROJECT STRUCTURE

The project activities are organised in different work packages addressing different scientific questions:

- WP1** What inclusion levels of microalgae and insects are relevant for optimized physical and nutritional quality of salmon feeds?
- WP2** How can EPA requirement be covered in practical microalgae feeds for salmon?
- WP3** What functional properties has insect meal and how can these be used in salmon feeds?
- WP4** How large inclusion of innovative ingredients can we have to maintain the Millennial salmon goal of a sustainable product for the consumer?
- WP5** How sustainable is Millennial salmon and what are the key elements for successful commercialisation?



WHAT IS NEW ? MICROALGAE AND INSECTS IN EXTRUDED SALMON FEED PELLETS



Photo: Corbion



Photo: Nofima A.S. Eivind Senneset

Wenger TX-52 co-rotating twin-screw extruder with 150 kg/h capacity at Nofima's Aquaculture Technology Center (ATC; <https://aquafeed.science/>) in Bergen, Norway, used in the optimization trials aiming to include high dietary levels of innovative ingredients in the Millennial salmon feeds.

High lipid microalgae can replace fish oil in aquaculture feeds, and technically can be added either in the feed mix prior to extrusion or to the oil in the coating process. This autumn Dr. Tor Andreas Samuelsen will investigate the limits and optimal microalgae inclusion levels in both processes to salmon feed pellet with good physical quality and maximum fat adsorption.



Photo: Nofima A.S. Helge Skodvin

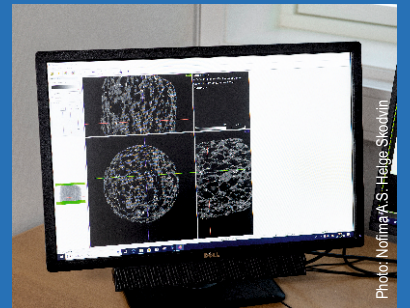


Photo: Nofima A.S. Helge Skodvin



Photo: InnovaFeed

Pilot vacuum oil coater at ATC used for the microalgae suspension coating tests in the Millennial salmon project. The produced feed pellets will be tested for their hardness, durability, expansion, water stability and microstructure.



Photo: Nofima A.S. Eivind Senneset

PROJECT PARTNERS AND FUNDING

Research institutes:



Funding industrial partners:



Funding public body:



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