



F3 Krill Replacement
Challenge



BRF Ingredients, Symrise Awarded Top Performing Krill Replacements in F3 Challenge

Two Global Companies Offer Promising Krill Alternatives for Aquaculture Feed

NEW ORLEANS — (March 7, 2025) —The F3 – Future of Fish Feed announced today the winners of the F3 Krill Replacement Challenge, recognizing Brazil-based **BRF Ingredients** and Germany-based **Symrise** for their groundbreaking innovations to replace krill in aquaculture feed. These companies are jointly winning the top prize for developing promising alternatives to krill, poised to transform the future of responsible aquaculture feed production.

"The F3 Krill Replacement Challenge has highlighted the incredible innovation and potential within the aquaculture industry, demonstrating that there are multiple solutions to replace krill," said Kevin Fitzsimmons, chair of the **F3 - Future of Fish Feed Initiative** and professor and director of International Initiatives at the University of Arizona. "These alternatives will help protect our oceans while ensuring the continued growth of aquaculture."

Symrise won for their protein hydrolysate ingredients and BRF Ingredients for their chicken hydrolysate. The winning companies shared the \$100,000 USD grand prize, which was awarded during the Opening Plenary Session on March 7 at the World Aquaculture Society's Aquaculture 2025 Meeting in New Orleans, Louisiana.

These two companies' products emerged as the top performing krill replacements in a 12-week feed trial on Atlantic salmon, demonstrating superior growth, feed consumption, and survival rates. The two winners were chosen from a pool of 10 finalists, who were themselves selected from 40 global companies that entered the F3 Challenge to test their krillmeal alternatives to offer innovative solutions that could transform feed production and reduce the environmental impact of traditional krill sourcing. Testing was performed to confirm all products being used in the trial were free of marine animal ingredients.

About the Winners

BRF Ingredients is an interdependent business unit of Brazil-based BRF, which aims to add value to raw materials in the agricultural chain and leverage the circular economy, through an awareness of innovation, efficiency and sustainability, generating performance ingredients for BRF and, for the Food Ingredients, Animal Nutrition and Human Health markets. BioActio Health & Performance is BRF Ingredients' Chicken Hydrolyzed Protein, an ingredient rich in scientifically proven functional bioactive peptides. Produced through the enzymatic hydrolysis process of chicken raw material proteins (offal, giblets and chicken meat), it is an ingredient that promotes maximum performance and health, as well as being hypoallergenic.

"For us at BRF Ingredients, this recognition reinforces our commitment to feed the world with sustainable, high quality and global standard Ingredients. We congratulate all participants while celebrating our hydrolyzed products team's technical skills and talent," said Marcel Sacco, vice president of marketing and new channels at BRF Ingredients.

Headquartered in Germany, **Symrise** is a global supplier of fragrances, flavors, and ingredients for food, cosmetics, and pharmaceuticals, serving clients in 160 countries with a focus on creating tailored, safe products that enhance quality of life and well-being. Symrise Aqua Feed leads the development of aquaculture feed ingredients, to reduce reliance on wild-caught proteins, including a functional hydrolysates support plant-based protein solutions for aquaculture, improving feed performance and sustainability.

"As a firm believer in the immense potential of byproduct valorization, I see this award as a testament to our ability to develop natural ingredients from circularly sourced raw materials," said Vincent Percier, marketing director at Symrise Aqua Feed. This innovation enables us to replace wild and endangered species like krill in feed formulations, contributing to a more sustainable global food production footprint."

In addition, the F3 judges awarded honorable mentions to three companies for their exceptional performance as promising krill replacements: China-based **Calyseco** (single-cell protein), Netherlands-based **Orffa Additives** (amino-acid extract) and France-based **Phileo by Lesaffre** (yeast extract).

The F3 Krill Replacement Challenge, the fourth in a series of aquaculture-industry focused feed contests hosted by the F3 Initiative, was designed to spark innovation for alternatives to krill in aquaculture feed. This challenge was inspired by feed companies, particularly from China, who suggested finding alternative attractants and palatants would significantly assist in the transition to "fish-free" feed. These krill replacement products have the potential to greatly benefit a wide range of farmed seafood producers seeking to improve the performance of "fish-free" feeds, making these alternatives a promising solution for enhancing feed quality and appeal.

The environmental impact of sourcing marine ingredients for animal feed, pet food, and nutraceuticals has raised concerns among environmental advocates and the public, highlighting the urgent need for sustainable alternatives to wild-caught forage fish and krill, a critical priority as the global demand continues to rise.

Overfishing, climate change, and industrial harvesting have strained krill stocks, threatening their role as a key food source for many marine species. More sustainable alternatives are essential to reduce reliance on krill, protect ocean biodiversity, and ensure the future of aquaculture without further depleting ocean resources.

The F3 Initiative was founded on the belief that the ocean's current fish stocks are insufficient to meet the needs of a growing global population, and that the development of innovative aquaculture feed ingredients is essential to secure a sustainable, food-secure future. The first three contests focused on eliminating wild-caught forage fish in feed.

The F3 – Future of Fish Feed is set to announce its next competition, focused on whole fish farm production, in the summer of 2025.

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The Future of Fish Feed (F3) is a collaborative effort between NGOs, academic institutions, and private partnerships to accelerate the commercialization of innovative, substitute aquaculture feed ingredients to replace wild-caught fish.

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