



# A Sustainable Protein Concentrate To Help Meet Growing Demand

The world's population is expected to grow to 9.7 billion people by 2050 according to the UN. In parallel to population growth, there is a shift in human consumption that incorporates higher levels of protein that is animal sourced. While the livestock sectors are increasing production to meet future demand, aquaculture is the fastest growing food production sector growing at an annual rate of 4-6% per a 2018 FAO report to help meet the future demand for protein in growing population. In recent years aquaculture production has even overtaken wild catch fish for human consumption.

Traditionally wild caught marine ingredients have been a major component of the aquaculture diet that require high levels of protein and energy. As the aquaculture industry has grown rapidly over the past 3 decades, the fishmeal supply has remained stagnant, and not able to sustainably keep pace with the growth of the aquaculture industry at the historically high inclusion levels. Because of this, there is a growing need for high quality proteins to replace fishmeal and replicate diets to meet the nutrient requirements for salmon, marine species, shrimp and other carnivorous species that they would typically eat in the wild. This is all happening with a limited natural resource base and competing interests for agriculturally based raw materials for use across the animal food sector. While new protein alternatives need to have a balanced nutrient profile that is both highly palatable and digestible, there are many other factors to consider. There are various new alternatives or ideas coming to the market, but they need to have meaningful volumes and production that is scalable, cost effective in diets, and sustainable for long term use. In addition to finding protein ingredients that actually work and are cost effective, there is increasing pressure from consumers wanting to know what raw materials the fish or shrimp are fed and if the ingredients are sustainably sourced.

At Cargill Branded Feed we have assets and technology at our disposal to create new solutions to meet the growing demand for high quality proteins to serve the aquaculture industry. Emphyreal 75 is a corn protein concentrate commonly utilized in salmon, marine species and other carnivorous diets, especially in salmon and trout diets across the Americas. Emphyreal 75 is used in diets that require high levels of protein and energy and have limited flexibility in the diet. Emphyreal 75 provides essential nutrients in a highly digestible and palatable format. Due to the protein concentration, this product gives the feedmill manufacturer the freedom to design new diets that they could not otherwise create. By doing so, the feedmill is able to provide high performing diets to the farmer, which ultimately leads to animals eating less and gaining weight faster. By reducing the amount of marine ingredients used in the diet, it also supports sustainability initiatives by reducing the FIFO ratio from a renewable raw material source.

Another of our brands in the aquaculture space is Motiv, which is a fermented corn protein targeted for use in shrimp diets. While this bioactive protein has an excellent nutrient profile with a balanced amino acid profile, its biggest benefit is creating a healthier gut for shrimp in an industry that struggles with disease and survivability. Inclusion of Motiv creates a better environment to grow beneficial bacteria in the gut, while reducing pathogens such as vibrio. By doing so, it enables shrimp to better utilize nutrients from the whole the diet, not just from our ingredient. This allows for a healthier animal that is in better position to combat stress and disease. These functional benefits improve performance, survivability, enhance red color, and better profits for the farmer. Motiv can displace fishmeal in the diet to support sustainability initiatives such as the FIFO ratio. While Motiv is a macro-ingredient, it also provides additive-type benefits that can eliminate some costly micro-ingredients while simplifying the diet for the feedmill manufacturer.

The Cargill Branded Feed team is focused on creating unique, innovative macro-ingredients to simplify the customer's diet, improve performance, and promote digestive health. An area that often gets overlooked is having a reliable supply and consistent quality. As a sole supplier of unique ingredients to the aquaculture industry we understand the value of having a reliable supply and consistent quality to ensure a repeatable experience for the customer. Today large global and regional clients rely on us to serve their businesses every single day. Cargill Branded Feed has created two species-specific products as alternative protein solutions to meet the demand for the growing aquaculture industry. Cargill Branded Feed has two manufacturing facilities in the US dedicated to the manufacture of unique protein ingredients for the aquaculture industry, with a footprint to expand both in the US and globally to meet our customer's needs.

## Emphyreal<sup>75</sup>

**Cargill Branded Feed creates proprietary, functional feed ingredients for production agriculture focusing on digestive health, improved energy and performance with brands in aquaculture, cattle and dairy.**

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