

## TECH OFFER

### Formulation and Optimisation of Fish (*O. niloticus*) Feed from Food Waste Protein Source



#### KEY INFORMATION

TECHNOLOGY CATEGORY:

Sustainability - Circular Economy

Waste Management & Recycling - Food & Agriculture

Waste Management

TECHNOLOGY READINESS LEVEL (TRL): **TRL3**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175378**

#### OVERVIEW

The aquaculture industry is facing rising costs of conventional feed. Premium protein sources such as fishmeal and fish oil are highly price-volatile due to fluctuating supply and demand, and reliance on imported feed further increases costs. Another key challenge is the growing volume of food waste. A survey of local food processing companies conducted between August 2022 and June 2023 identified approximately 174,300 tonnes of homogeneous food waste, highlighting the scale of the problem.

This technology offers a sustainable aquafeed solution by converting by-products from soy sauce production, fish processing, and bread waste into nutritionally balanced feed for tilapia (*O. niloticus*), maintaining optimal growth performance while reducing dependency on conventional, expensive feed ingredients.

## TECHNOLOGY FEATURES & SPECIFICATIONS

The technical specifications and features of the solution are as follows:

- **Processing:** Transforms readily available soy press cake, fish processing waste and bread into aquafeed through low-shear mixing, fermentation, spheronization and pelletization.
- **Formulation:** Provides feed formulation designed specifically for tilapia, incorporated with essential proteins, amino acids, carbohydrates, lipids, vitamins, and minerals.
- **Pellet properties:** Produces water-stable sinking pellets with enhanced physical stability and controlled nutrient leaching properties
- **Quality control:** Ensures consistency through physical profiling, nutritional analysis

## POTENTIAL APPLICATIONS

This feed has been formulated for tilapia, but is open to reformulation to allow opportunities in:

- Feed for other types of fish species
- Ingredient for further development of fish feed
- Development of feed for other animals whether it is farm or pets
- Upcycling of food waste into higher value products

## UNIQUE VALUE PROPOSITION

- Accelerate the R&D cycle and start with a proven sustainable aquafeed formulation that delivers better growth at a lower price
- Reduces feed costs through the utilisation of low-cost waste ingredients
- Supports circular economy by converting food waste into valuable resources
- Provides nutritionally complete feed specifically formulated for tilapia
- Contributes to meeting sustainable certification standards like ASC (Aquaculture Stewardship Council) or BAP (Best Aquaculture Practices)