GreenariA
Go Green, Learn Green
An Agricultural Monthly e-Magazine

Volume 02, Issue 07, 2024
ISSN: 2584-153X
Article ID: G-24-0713

BIOFLOC TECHNOLOGY

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ABSTRACT:

Biofloc Technology (BFT) enhances aquaculture by improving water quality and fish health through beneficial microbes that convert waste into protein-rich biomass. By maintaining a high carbon-to-nitrogen ratio, BFT efficiently assimilates nitrogenous waste, reducing the need for water exchange and supplementary feed. This sustainable approach supports higher stocking densities and lowers operational costs.

Key word: *Biofloc Technology, waste conversion, stocking density and lowers operational costs.*

INTRODUCTION:

Biofloc technology (BFT) is a key innovation in aquaculture that aim to improve water quality reduce environmental impact, and improve fish health. This novel strategy uses the power of beneficial microbial communities to convert waste products like uneaten feed and fish excreta into protein-rich biomass. The microbial biomass can be ingested by the fish, efficiently recycling nutrients throughout the ecosystem. BFT eliminate the need for water exchange and supplementary feed while also minimising pollution discharge, making it a sustainable and cost effective solution for intensive aquaculture operations. Current production and productivity in biofloc system are outstanding, with many commercial companies reporting significant increases. Biofloc systems may handle larger stocking densities, resulting in increased biomass production per unit area compared to traditional aquaculture.

BIOFLOC TECHNOLOGY:

It is a fish farming system that recycles waste nutrient as fish food. Biofloc, specifically cultivated microorganisms are introduced into the water to form microbial protein from toxic fish waste and other organic matter in the water. This helps maintain water quality as well as lowering cost. This system was developed to improve the environmental control over the aquatic animal production.

OPTIMIZING NITROGEN CYCLING WITH BIOFLOC TECHNOLOGY:

The idea behind this method is to create a nitrogen cycle by promoting the development of heterotrophic microorganisms, which in turn assimilates nitrogenous waste that may be used as feed for cultivated spices by maintaining a greater C:N ratio. Because heterotrophs have ten times higher growth rates and microbial output per unit substrate than autotropic nitrifying bacteria, hazardous nitrogen is immobilised more quickly in bioflocs.

Species suitable for biofloc:

- Singhi, Magur, Pabda, Anabas/ Koi, Pangasius
- Common carp, Rohu, Tilapia, and milk fish

STEPS IN BIOFLOC PREPARATION:

To prepare a biofloc system,

1. Clean a container or tank.

2. Fill with non-chlorinated water.

3. Add organic carbon source (e.g., molasses or sugar) and nitrogen source (e.g., fish feed or urea).

4. Install an aeration system.

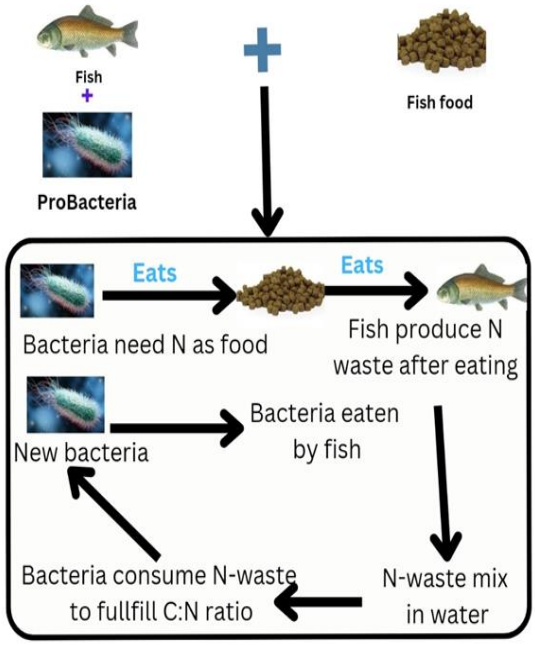
5. Introduce starter culture.

6. Monitor and maintain water parameters.

7. Feed the inoculum daily with organic carbon and nitrogen sources.

8. Allow the inoculum to develop over 7-10 days.

9. Introduce the inoculum into the main biofloc system. Gradually acclimate the culture to the larger system.



BIOFLOC INOCULUM PREPARATION:

Step 1: To grow flocs in 15000 Litres of fresh water, use 150 Litres of inoculum. Begin by filling a clean tub or can with 150 Litres of water and vigorously aerating it.

Step 2: Add 3 kg of pond soil, 1.5 gramme of ammonium sulphate/urea, and 30 gm of carbon source (jagerry, wheat flour, or tapioca flour).

Step 3: Mix well with water in the tub and aerate thoroughly.

Step 4: After 24-48 hours, the inoculum will be ready for transfer to the main tank. The formation of floc requires the daily addition of a carbon source.

Step 5: To maintain the C:N ratio, 600 gram of carbon source should be provided for every 1 kg of feed containing 25% crude protein.

ADVANTAGES OF BIOFLOC TECHNOLOGY:

An increase in biosecurity. Minimises the danger of disease introduction and dissemination while reducing water pollution. It lowers the expense of regular feed and the use of feed high in protein. By using less expensive food fish and garbage fish for fish feed composition, it lessens the strain on capture fisheries.

- Reduces environmental effect.
- Eco-friendly cultural system.
- Use of land and water by judges A system with little or no water exchange.
- Greater productivity (It improves feed conversion, growth performance, and survival rate in fish culture systems).

CONCLUSION:

Biofloc technology represents a significant advancement in sustainable aquaculture. It supports the production of healthier and more resilient aquatic species.

Continued research and development in this field will likely further optimize these systems, making biofloc a vital component in the future of sustainable aquaculture practices.