

Growing sustainably with Bioflocs

Due to the global climate change are sustainable agricultural practices essential. Aquaculture contributes largely to their adjacent ecosystem and every effort made towards reducing the impact is crucial to the sustainability of the industry and the environment.

The treatment of aquaculture effluent yields nitrate as a by-product that still contributes to eutrophication of water bodies. Methods that reduce the effluent to completely harmless compounds are costly to operate and mostly involve dilution of the discharge. Alternatively, biofloc technology can be used to solve the problem.

Bioflocs are clusters of heterotrophic bacteria, protozoa, rotifers and other microorganisms. Bioflocs are able to utilise nitrogen compounds more efficiently than the conventional method using autotrophic bacteria to treat total ammonia nitrogen (TAN), nitrite and nitrates.

Carbohydrates are added in the system to encourage activity of heterotrophic bacteria. Heterotrophic bacteria use carbohydrate as an organic carbon source and organic nitrogen to assimilate into bacterial biomass. In other words bioflocs use nitrogen wastes from the fish and carbon from starch. This is an effective way of removing nitrogen compounds from the system. The accumulated suspended solids can easily be collected and processed into formulated feeds. Filter feeding aquatic species such as tilapia and shrimps utilize the bioflocs as food. The feed conversion ratio (FCR) and the demand for protein in the administered feed are reduced. The cost of buying the food is also reduced which helps the farmer to be more profitable.

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