

A close-up photograph of a fish's head, showing its eye and scales. The fish has a dark, almost black body with a lighter, silvery-gold sheen on its scales. The background is a solid dark blue. The title text is overlaid on the upper portion of the image.

BIOFLOC FISH FARMING

R.K BHOI

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(R.K BHOI)

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Introduction

It is a new and expensive technique, in which toxins such as fish and shellfish can be converted into protein-rich foods such as nitrite and ammonia. It is a method used in aquaculture systems with high stocking density, strong aeration and limited or zero water exchange under biota formed by biofloc.

Initial process

Biofloc systems were developed to improve environmental control over aquatic animal production. In the case of aquaculture, the most powerful factor is feed price (60% of total production value) and the most limited factor is water / land availability. Wastewater treatment is required for high density and aquatic animals. The biofloc system is a treatment of wastewater that has gained importance as an approach in the field of aquaculture.

The principle of this technique is to maintain a high cycle while producing the nitrogen cycle such as the N ratio through the growth of the heterotrophic microbial, which is to mimic the nitrogen.

Biofloc technology is not only effective in treating waste, but also provides nutritious food to aquatic animals at low cost. High C: N is maintained by a carbohydrate source and improves the quality of water by producing high quality single cell microbial protein. In such cases, dense microorganisms develop and act as bioractors that regulate the quality of water and protein sources. The stability of the toxic nitrogen species occurs at a faster rate in biofloc because the growth rate of heterotroph per unit substrate and microbial production are ten times higher than that of the autotrophic nitrifying bacteria.

This is based on the principle of flow within the biological system.

Biofloc techniques have been applied to shrimp farming, as it prevents its low habitat and environmental change. Shrimp and Indigo larvae have been studied to estimate growth and reproductive performance.

Shrimps observed in the bio system were observed to have a better reproductive ability compared to the method. Similarly, there was also an improvement in larval growth **Feed start process**

Biofloc is a heterogeneous aggregate of suspended particles and a variety of microorganisms involved in extracellular polymeric materials. It is made up of microorganisms such as germs, algae, fungi, spinal cord and detritus. It is a protein-rich living feed that is used as a natural food in farming methods. Each floc is held in an empty matrix cone glass Which is secreted by bacteria and bound by microorganisms It looks very small in the naked eye, but when viewed in a microscopic light, it is 50 to 200 μm in size.

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Protein plays a special role in fish food The total diet contains 25 to 50 percent protein and 0.5 to 15

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percent fat, and a small amount of vitamins, minerals, and phosphorus. As soybeans play a key role in making fish food, 80 percent of the total cost comes from food. Therefore, biofloc systems have been developed to reduce food costs. The biofloc system provides 2 to 3 percent of the weight of the fish, which can reduce farmers' costs.

Benefits of the biofloc system

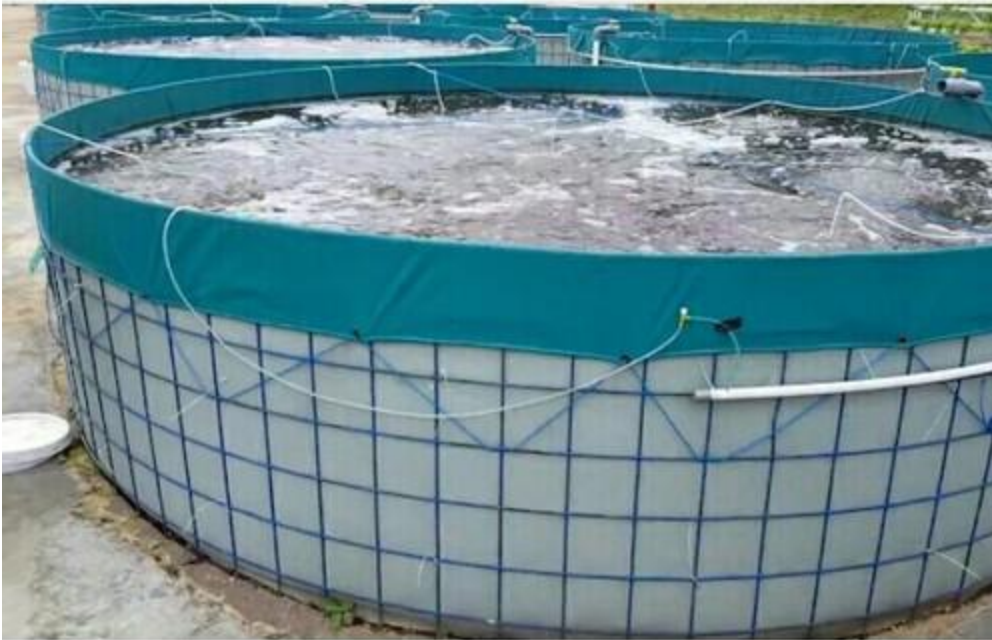
- Environmentally friendly
- It reduces environmental impact
- Land and water use improve efficiency
- Limited or zero water exchange
- High productivity (it increases survival rates, growth rates, increases feed conversion in fish farming systems)
- High biological safety
- Reduces the risk of water pollution and pathogen spread and spread
- Effective feed production costs
- It reduces the cost of protein-rich feeds and standard feeds
- It reduces stress on fish farming That's the decent thing to do, and it should end there.

Equipment needed in a 10,000 ltr tank

- Round tank 10000 ltr 550 gsm 1 pc
- Net 45 feet 1pc
- Side Safety Line 45 feet 48 inches height 1pc
- Air pump capacity of 10,000 liters per PC

- Air bubble stone 12pc
- 12 holes Air Valve pvc 1 PC
- 50 m aeration pipe 1 pc

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- Temperature meter 1 PC

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- 1 pc of tds meter
- Ph meter 1 PC
- Ammonia kit 1pc
- Outlet Albo+ Water Outlet 1 PC
- Probiotic diet 1 kg 1pc

How to set a 10,000 liter fish tank

Biofloc fish farm tanks can be made of cement or tarapulin. However, if you have extra money to spend Then you can make it with stainless steel It will last a long time. Whichever material you choose, you have to determine the water holding capacity In order for the fish to grow properly, your tank should be round This will keep the fish in a continuous frame without any interruption Therefore, the fish will grow faster You have to keep this basic formula in mind for the volume of the tanker to calculate the size. The depth of water in the tank should be within 3.5-4 feet This is $V = \pi r^2 h$, where the tank is $V =$ volume, the radius of the tank = the height of the tank, and 3.

= 3.14. Then you will get the cft value.

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Water preparation for 10,000 liters tank 7

(10,000 liters of material)

- Lime or calcium carbonate (CaCO_3) 0.500 g
- Raw salt 10 kg (Non Iodised)
- Molasses 01 kg
- Starter Probiotics 0.300 grams

Start filling 35 to 50% water after filling the tank Do not fill more than 50% because some of the bacteria need some environment to increase it to mix the above ratio on the amount of water. After the above mixture, keep the

tank in high aeration for 7 days Due to probiotics it will start destroying the ammonia in the water which will start creating a familiar environment for the fish.

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Storing fish

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Fish seed can be bought from the market Before you put the fish in a tank, you need to get rid of it The first step is to soak the fish in the potassium permanganate for about 30 seconds. Then the fish should be soaked in salted water for about 30 minutes. It will disinfect the fish and be ready for stocking AIR BREATHER FISH

- Magur
- Singhi
- Tilapia
- Pangasius

- Pawda
- Desi magur

UNDER WATER FISH

- Rohi
- Catla
- Grass carp
- Silver carp
- Common carp
- Rupchand

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AIR BREATHER FISH requires less oxygen in the water. The fish can survive anywhere under any 9

circumstances, where UNDER WATER FISH require more oxygen, new farmers are advised that, if you are new to the biofloc system, the above

water will come up. You should be able to cultivate both if you are an experienced person or not.

The main water quality in fish farming Maintaining water quality means keeping an eye on pH and ammonia levels. If the pH decreases or it decreases we should be given lime or calcium carbonate (CaCO_3) water to increase the pH. Levels must be between 7 - 8.5

On the other hand, ammonia increases after the release of fish. We provide food with fish for their development. Foods contain protein. Fish eat waste products in the form of these proteins and ammonia. Different foods also turn into ammonia. Therefore, in the deep fishing system, ammonia reaches a high level, which is extremely harmful. To reduce ammonia, we need to add a carbon source, such as molasses. The ammonia level should be 0 ppm. Probiotics eat these carbon dioxide and convert ammonia into protein. So the waste of the fish turns into feed. The fish eat it which reduces the cost of feed.

Another important parameter is the oxygen level. It should be around 6-8 ppm. Many oxygen meters or test kits are available in the market. People should check their oxygen levels every day. The right pump must be used. For a tank with a capacity of 10,000 liters, the flow rate of the oxygen pump should be 80

liters per minute. TDS should be around 1800 to 2000 ppm. If TDS is low, add a little raw salt (Non Iodised) to your tank. If TDS increases, replace the old water with fresh water. 9



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The main trend in fish farming

In biofloc fisheries, the amount of floc is 30 to 40 ml per 1000 ml. This is important. If the flocculation is reduced, the ammonia level in your tank will increase. If the flock grows, the water will thicken and it will be difficult for the fish to breathe. So it is very important to maintain the flow. If the flock grows, replace the old water with new water. If flocculation is reduced, add 0.25 mg of probiotic to your tank with some molasses.

Controlling ammonia

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Ammonia control is an important issue in the biofloc system. It can be controlled by a carbon source to 11

reduce nitrogen in water. To reduce 1 mg of nitrogen, we need to keep 10 grams of carbon source (molasses) in water. This is known as the C: N ratio. It should be maintained at a ratio of 10: 1

In the biofloc system we need to maintain a 10: 1 C / N ratio. This means that the amount of carbon dioxide required is 10 times that of ammonia. For example: If the ammonia in your tank is 1ppm, it means 1mg / liter. So, if your tank is 10,000 liters and the ammonia reading is 2ppm. This means that the total amount of ammonia is 20,000 mg or 20 grams of ammonia. To control these 20 grams we need (20×10) grams = 200 grams of carbon source (molasses).

We now have about 25% carbon (molasses) available at low prices. So if the ammonia level is 2 ppm we have to supply $(200 / 0.25)$ grams = 800 grams of molasses. If the ammonia level is 1ppm then we need 400 grams of molasses from the above calculation. And last but not least, the headline made you read this article. The biofloc system is the future of fish farming

The End 11

