

Journals



Janata Shikshan Sanstha's
KISAN VEER MAHAVIDYALAYA, WAI
DEPARTMENT OF ZOOLOGY

Certificate Of Attendance

This is to certify that Shri / Miss Jadhav... Komakshi G... of Class B.Sc. Part III Roll No. 07.....Exam Seat No 31550.....has attended the Local Visit arranged to Biofloc Fish Culture, Amrutwadi (Panchwad)

18.../5/2022


Teacher-in -Charge


Head, Dept. of Zoology


Examiner

Biofloc fish culture

Day:- Wed

Date :- 18-5-22

Place:- Amrutwadi

Time :- 9:00 - 2:00

Introduction :-

The global population is expected to reach 9.6 billion by Yr. 2050 and as the demand for animal protein is increasing year by year it is a challenge to provide quality protein by safe guarding its natural resources for future generations. In this context, aquaculture plays a key role in promoting health by providing animal protein as well as generating employment & economic growth.

Biofloc Technology (BFT) is considered as new "blue revolution" since nutrients can be continuously recycled & reused in the culture medium, benefited by the minimum or zero-water exchange, BFT is an environment or friendly aquaculture technique based on in-situ micro-organisms production. Biofloc is the suspended growth in ponds/tanks which is aggregate of living & dead particulate organic matter, phytoplankton, bacteria & grazers of the bacteria. It is the utilization of microbial processes within the pond/tank itself to provide food resource for cultured organism while at the same time acts as a water treatment remedy.

Thus, this system is also called as active suspension ponds or heterotrophic ponds or even green soup ponds.

Composition & Nutritional values of Biofloc :-

Biofloc is a heterogeneous aggregate of suspended particles & variety of micro-organisms associated with extracellular polymeric substance. It is composed of micro-organisms such as bacteria, algae, fungi, invertebrates, detritus, etc.

It is a protein rich live feed formed as a result of conversion of unused feed & excreta into a natural food in a culture system on exposure to sunlight & vigorous aeration.

Each Floc is held together in a loose matrix of mucus that is secreted by bacteria & bound by filamentous micro-organisms or electrostatic attraction large flocks can be seen with the naked eye, but most of them are microscopic floc size range from 50-200 micron.

A good nutritional value is found in Biofloc. The dry weight protein range from 25-50%. Fat ranges 0.5-15%. It is a good source of vitamins & minerals, particularly phosphorus. It has an effect similar to probiotics. The dried biofloc is proposed as an ingredient to replace the fishmeal or soyabean in the feed.

Species suitable for biofloc culture :-

Major cultivable fish species in BFT :-

A basic factor in designing a biofloc system is the species to be cultured. Biofloc system works best with species that are able to derive some nutritional benefits from the direct consumption of flocks. Biofloc system is most suitable for species that can tolerate high solid consumptions / concentration in water & are generally tolerant of poor water quality. Some of the species that are suitable for BFT.

- Air breathing fish like singhi (*Heteropneustes fossilis*), Magur (*Clarias batrachus*), Pabda (*ompok pabda*), Anabas / koi (*Anabas testudineus*).
- Non air-breathing fishes like common carp (*Cyprinus carpio*), Rohu (*Labeo rohita*), Tilapia (*Oreochromis niloticus*), milkfish (*Chanos chanos*).
- shell fishes like vannamei (*Litopenaeus vannamei*) & Tiger shrimp (*Penaeus monodon*)

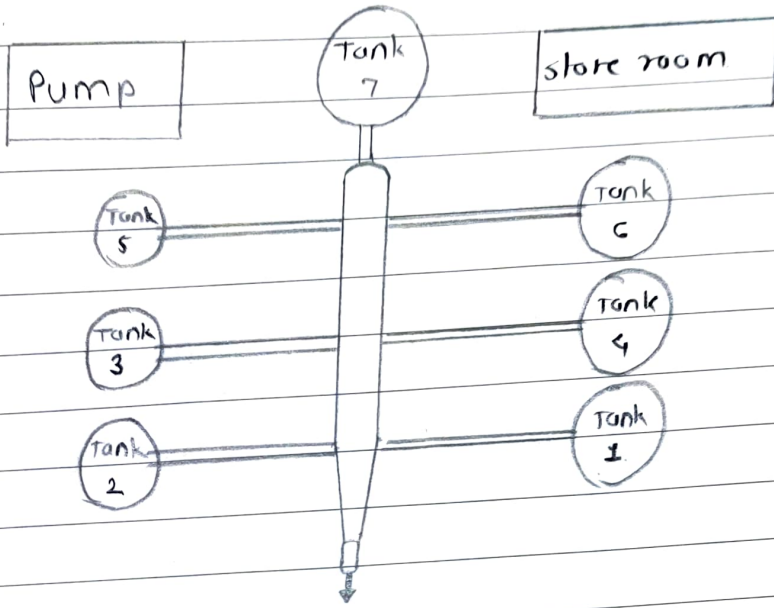
Advantages of Biofloc :-

- i) Ecofriendly culture system.
- ii) Reduces environmental impact.
- iii) Judicial use of land and water.
- iv) Limited or zero water exchange system.
- v) Higher biosecurity.
- vi) Reduces the pressure on capture fisheries i.e. use of cheap food fish & trash fish for fish feed formulation.

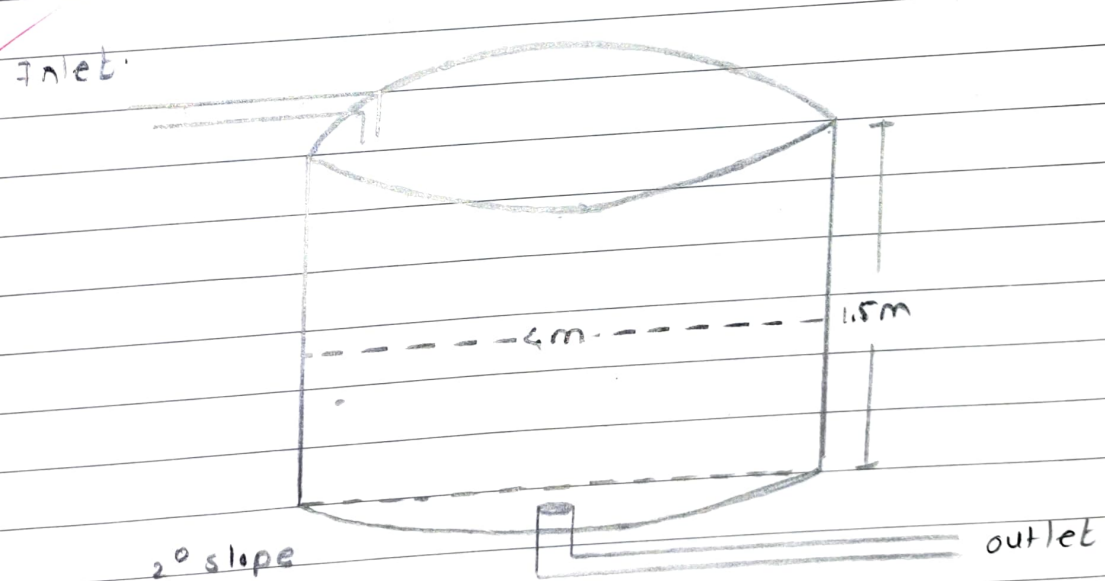
How Biofloc Technology Works :-

- i) Biofloc system is a waste water treatment which has gained vital importance as an approach in aquaculture.
- ii) The principle of the technique is to maintain the higher C-N ratio by adding carbohydrate source & the water quality is improved through the production of high quality single cell microbial protein.
- iii) In such conditions, heterotrophic microbial growth occurs which assimilates the nitrogenous waste, that can be exploited by the cultured species as a feed & also works as bioreactor controlling of water quality.
- iv) Immobilization of toxic nitrogen species occurs more rapidly in biofloc because of the growth rate & microbial production per unit substrate of heterotrophs are ten-times greater than that of the autotrophic nitrifying bacteria.
- v) This technology is based on the principle of flocculation within the system.

Layout & Design :-



Cross section of one tank :-



Preparation of Inoculum:-

A) Method I :-

For 15000 Litres of Fresh water, 150 Litres of inoculum is required for the floc development.

step I

Take clean tube/can with 150 Litres of water and continue vigorous aeration.

step II

Add 3 kg of pond soil

+

1.5 gm of Ammonium sulphate/Urea

+

30 gm of carbon source (Jaggery/Wheat Flour)

step III

Mix it well with water in tub & provide adequate aeration.

step IV

The inoculum will be ready after 24-48 hrs & it can be transferred to main tank.

Daily addition of carbon source is required for the development of floc. For every 1kg feed given, 600 gm of carbon source is to be added to maintain C:N of 10:1

once the floc reaches 15-20 ml of carbon source is not required.

ACKNOWLEDGEMENT

I am thankful to the principle, KVM, wai, Head department of zoology for permission of the local visit and our teacher in charge Miss. Asha pisal for guiding during visit to Foot of Golden Biofloc Farm pachwad [Amrutwadi]. We are also grateful to the authorities of the respective area for permission and giving us related information.

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Pisal.
01/06/22



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