

## **Sustainable aquaculture technique improves survival rates of Tilapia fish in Vietnam**

### Abstract:

Tilapia is the second most cultured fish worldwide after carps. Tilapia are easily cultured in a wide variety of environments and are generally hardy and disease free; however, they are susceptible to stress induced disease problems. However, extensive losses from disease outbreaks in aquaculture worldwide are a major threat to the sustainability of the aquaculture industry. To control this, a safe and natural product for sustainable aquaculture is essential.

### Background:

A fish farmer breeding Red Tilapia fish in Vietnam, was facing major concerns in his aqua pond. The fish breeder had 8 hectares of area under fish farming. However, the fish in his farm, looked unhealthy and the fish breeder suspected that they were infected. Even after the use of medication, the fish were lethargic, showed slow movement and had a reduced appetite, thus eventually reducing their growth and survival rates.

### Causes of disease outbreaks in fish ponds:

Intensive fish production often results in increased incidence of diseases in fish majorly due to poor water quality. Unfortunately, water quality is one of the most overlooked aspects of pond management, until it has starts affecting fish production. Most fish kills, disease outbreaks, poor growth, poor feed conversion efficiency and similar management problems are directly related to poor water quality. Water quality of fish ponds is adversely affected by the accumulation of fish excreta, uneaten fish feed and other organic compounds that may eventually lead to excessive growth of unwanted algae. This not only impairs the pond water colour, but also a reduces the levels of dissolved oxygen in water. Such undesirable environmental conditions for the fish, increase their susceptibility to infectious diseases and drastically reduces fish growth.

### The solution:

The fish farmer, was advised to use **Bioclean Aqua Fish** (soil and water probiotic) at a dosage of 1 kg/hectare, every 15 days, to improve the water quality of the pond. However, given the fact that diseased fish eat poorly, improving the water quality will not suffice. Hence, in addition, the farmer was advised to also add 5 g of **BioGut Aqua** (feed probiotic) per kg of feed to protect the fishes from diseases and improve their health.

### Changes observed in the fish pond after using **Bioclean Aqua Fish** and **BioGut Aqua**:

Parameters	Before treatment	After treatment
Pond water colour	Deep green (algal bloom)	Green (healthy plankton)
Feed conversion ratio	1.92 (Poor)	1.46 (High)
Post harvest pond bottom	Black soil settled at the bottom	No black soil, bottom clean
Odour	Smell of ammonia	No odour
Survival rates	54.00%	80.00%

**Benefits of *Bioclean Aqua Fish* and *BioGut Aqua*:**

***Bioclean Aqua Fish*** is a consortium of beneficial bacteria that help maintain water quality and colour, and stabilize the dissolved oxygen concentration in water. These bacteria help to biologically reduce the levels of ammonia and production of toxic gases like H<sub>2</sub>S, ensuring a healthy pond and improved survival of fish.

The beneficial microbes in ***BioGut Aqua*** help the fish in better assimilation of nutrients and microelements and improves their gut microflora. This contributes to the development of a stronger immune system and an increase in the survival rates and growth performance of fishes. It also ensures maximum weight gain of the fish.

**Conclusion:**

After using ***Bioclean Aqua Fish*** in the fish pond, clear results were noticed within 85 days. Biological reduction of ammonia in the water ensured that there was no foul odour in the pond. The colour of the pond water also showed significant improvement. Stabilization of the dissolved oxygen in the pond by ***Bioclean Aqua Fish***, complemented by increased feed intake and digestibility by the fish after using ***BioGut Aqua***, improved the overall health of the fishes.

***BioGut Aqua***, helped in enhancing the growth, stimulating the immune system and improving the resistance of fishes to infectious diseases. There was an increase in the survival rate of the fishes by 26% and the fishes looked healthy and active. There was significant improvement in the growth performance.

***Bioclean Aqua Fish*** and ***BioGut Aqua*** used together proved to be extremely beneficial in stabilizing the pond water parameters and for enhancing the overall growth and development of tilapia fishes.