SIF TECHNOLOGIES
Water Treatment Solutions

Case Study

DPA System Helps Indonesian State Fish Farm Increase Yield

Challenge

In early 2006, SIF Technologies together with her counterpart in Indonesia collaborated with a state-owned fish farm in Indonesia.

The farm faces high production cost due to various reasons in aquaculture operations. They needed to control the quality of water. When contamination of water occurs, the organic nutrient levels in the fish ponds increase. If temperature and nutrient levels are optimum, there will be rapid algae growth, leading to "algae bloom." Algae blooms would cause oxygen reduction within fish ponds and threatens the survival of livestock. The farm is also concerned about the time duration taken for fishes to grow to levels where they can be traded. Lastly, the farm also had to tackle the high food conversion rate of their livestock.

Solutions

SIF Technologies and its Indonesian counterpart developed a water treatment program for this trial which took place over 5 months. The trial used two standard breeding cement tanks, each measuring 3 m x 10m x 1.2m and the water level in each tank was approximately 100cm. The Tilapia fish (150 pieces in each tank – 1 inch in average length), each weighing from 24g to 25g on average, was specially selected and reared in the tanks.

DPASYS™ 1000 was introduced to the water flow system, subjecting the water in one of the tanks to treatment. Fishes are fed twice a day: once in the morning and late afternoon. Dosage of fish food was 3% of the fish total biomass. The result of the trial was evaluated by measuring the Total Dissolved Oxygen (TDO), pH level and temperature. Samples of the fishes were drawn every two weeks to determine their growth rates and food conversion rate would be calculated at the end of trial.

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Results

Higher Quality of Water

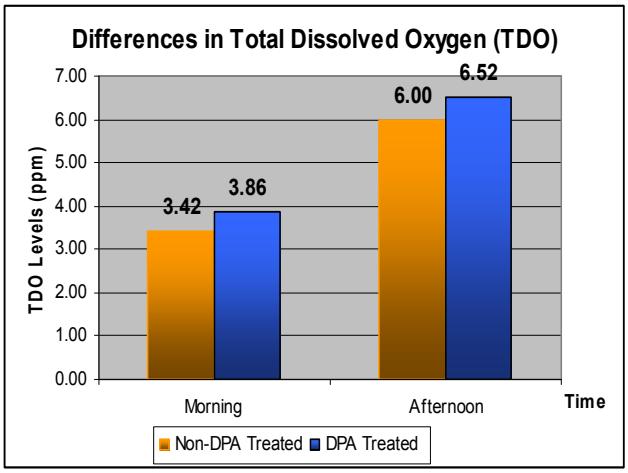
14 days after the trial started, algae proliferated in normal water while water treated with DPA system was clearer, with less algae. Appearance of the water was also documented 42 days and 51 days after the trial started. Snapshots showed that the water treated with DPA system was clearer while normal water in another tank was greenish due to growth of algae.

Physical Appearance of Water 10 Oct 2007

Normal water blooming with algae

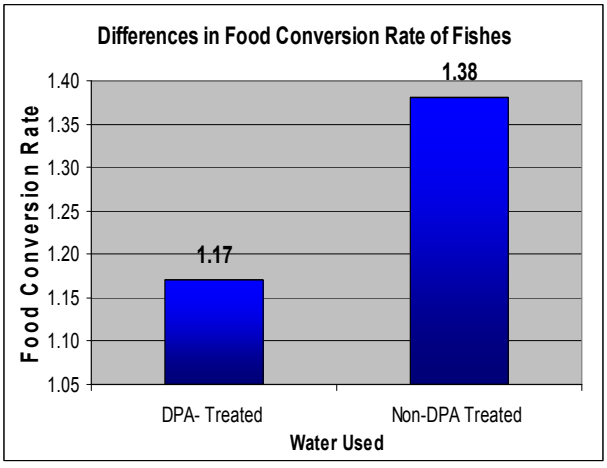
DPASYS treated water

Evaluation results show that DPA system has a positive impact on the quality of water. The levels of TDO in DPA treated water are 3.86 ppm and 6.52 ppm in the morning and afternoon and consistently higher than that of normal water. The total bacteria level and average pH level are also consistently lower than normal water.



Improvement in Growth Rate and Food Conversion

Fish which were bred in water treated with DPA system consumed less food than those in normal water for it to grow to the same level. Food conversion for the fishes in DPA water is was 1.17 compared to 1.38 of Non DPA treated fish.



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At the end of the trial, measurements of the Tilapia fish were taken on 28th Feb 2007. Results show that the fishes grown in DPA treated water had greater average lengths, widths and thicknesses than those of fishes grown in non-DPA treated water. In addition, the fishes grown in DPA treated water were also heavier than fishes in normal water.

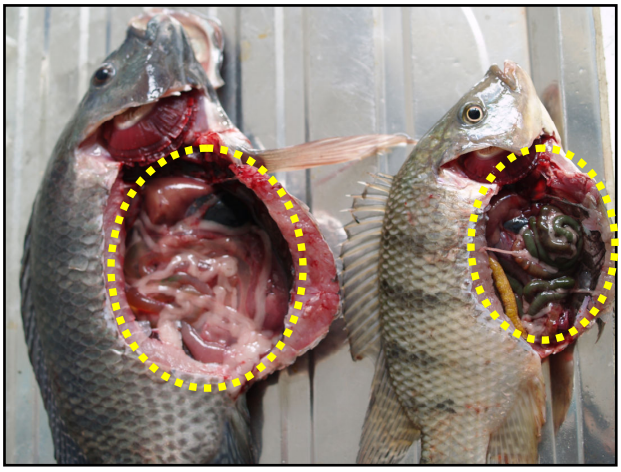
Last Observation during the visit on 28 Feb 2007

Left- Fish in DPA treated water had an average weight of 520 g. Right- Fish in non DPA Tank had an average weight of 400 g

Better Internal Condition of Fish Reared in DPA Water

An autopsy was also conducted to investigate the internal conditions of the fishes and it was found that the fishes in DPA treated water had better internal conditions. The gills of the fish reared in DPA treated water displays a more radiant colour. The gills of the fish also show a higher level of transparency and this means it was less contaminated. The fish's intestines contained less plankton and displays a clearer colour.

Left- Fish in DPA-treated water had fresher colours. Right- Fish in non-DPA water had less radiant colours.



Left- Fish in DPA- treated water developed intestines with clearer colours. Right- Fish in non-DPA water shows a darker shade, indicating greater presence of plankton.

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