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Using OXY-POND™ to Grow Tilapia (Nile River Perch)
Taipei, Taiwan – January 2010

Environmental & Infrastructural Technologies, Inc (EITCO) of Taipei, Taiwan conducted an aqua-farm water enhancement demonstration project in Guantien, Tainan County, Taiwan from March to December 2009 using two prebiotic products from Biofeed Solutions, Inc. (BSI) of Glendale, Arizona, USA.

Figure 1 Demo Pond

Guantien is the capital of tilapia farming in Taiwan, with some 200 tilapia aqua-ponds concentrated in the area. A one-hectare demonstration pond (demo pond) **(Fig. 1)** owned by Master Huang, Jinfa (Master Huang), a renowned tilapia farmer in Guantien, was chosen for the study. About 25,000 tilapia fingerlings of varying sizes were released into the approximately 16,000 cubic meters of water of the demo pond from late March to early April, 2009.

Similar amount of fingerlings were released to a neighboring pond of equal surface area and water volume as the “blank pond” **(Fig. 2)**.

Figure 2 Blank Pond

The initial numbers of fish in the ponds were calculated using the total weight of the released stock divided an estimated average weight of the fish from several catches that made up the stock. Because the actual number and weight distribution of each catch were different, these initial numbers of tilapia fingerlings in the two ponds were rough estimates.

These tilapia ponds are all mechanically fed with formulated fish feed **(Fig. 3)**. Fish farmers control the amount of the feed by visually “gauging” the consumption rate. The fish feed pellets are designed to float on top of the water for hours. When enough pellets are observed on the water surface, it is a sign that the fish have enough to eat.

EITCO and Master Huang agreed that besides the fish feed, no antibiotics, pesticides, or any other biologically harmful materials will be used in or around the demo pond.

Figure 3 Automatic Feeder Tube and Tilapia Feeding

Beginning the third week of April, 2009, 16 liters each of BSI's OXY-POND™ and AERO™ were manually sprayed and poured into the demo pond at two-week intervals **(Fig. 4)**. The use of AERO™ was to control the algae growth in the pond, a major concern in all densely stocked aqua-ponds in southern Taiwan during the summer months. The use of AERO™ was suspended after several typhoon-induced torrential rainstorms in July and August, 2009.

Figure 4 Biofeed Products Simple Application Process

Due to its non-toxic growth method (no antibiotics, pesticides and other toxic materials) adopted, the tilapia raised in the demo pond was pre-ordered in July for raw consumption (sashimi) in Japan. Because of strict food import standards in Japan, samples of the fish were subjected to irregular inspections by the buyer throughout the growth cycle.

Because of the better water condition and growth environment, Master Huang discovered that the demo pond required less fish feed than the blank as well as all his other ponds, which resulted in at least $2,000 of saving on fish feed during the growth cycle.

Harvest of the demo and the blank ponds took place in early December 2009. The fish were repeatedly netted **(Fig. 5)**, weighed **(Fig. 6)**, stored an oxygen-saturated water tanks **(Fig. 7)** and shipped to processing plant until most of the matured tilapia were caught.

Figure 5 Netting Operation

Figure 6 Electronic Weighing

Figure 7 Temporary Storage in Oxygen-rich Tank

The harvested tilapias were sold according to their weight. Fish was sold at $1.81/kg if weighed more than 1 kg, $1.25/kg if weighed below 1 kg or at $1.13/kg if weighed below 0.8 kg. Fish weighing less than 0.6 kg was regarded immature.

At the final count, the total sale from the demo pond was $5,000 more than that from the blank pond. If the initial fingerling size distributions in the two ponds were close to each other, Master Huang should have harvested about 3,200 kg more tilapia from the demo pond.

It is concluded that the use of BSI's AQUA PRO^{TM} and AERO^{TM} can significantly improve tilapia farming in Taiwan. Together with the saving of $2,000 on fish feed, applying the prebiotic products to a one-hectare area tilapia aqua-pond can generate at least $7,000 of additional revenue per year.

Seasonal water quality data analyzed by Zhong Shan University's Ocean Environment Research Lab in Kaohsiung are shown in Figs. 8 and 9. The data revealed that, comparing with the blank pond, the use of AQUA PRO^{TM} and AERO^{TM} effectively controlled the total phosphorous (TP), total nitrogen (TN), total kjeldahl nitrogen (TKN), chlophil-a (chl-a), and turbidity in the demo pond. The influence on nitrite and nitrate was less significant.

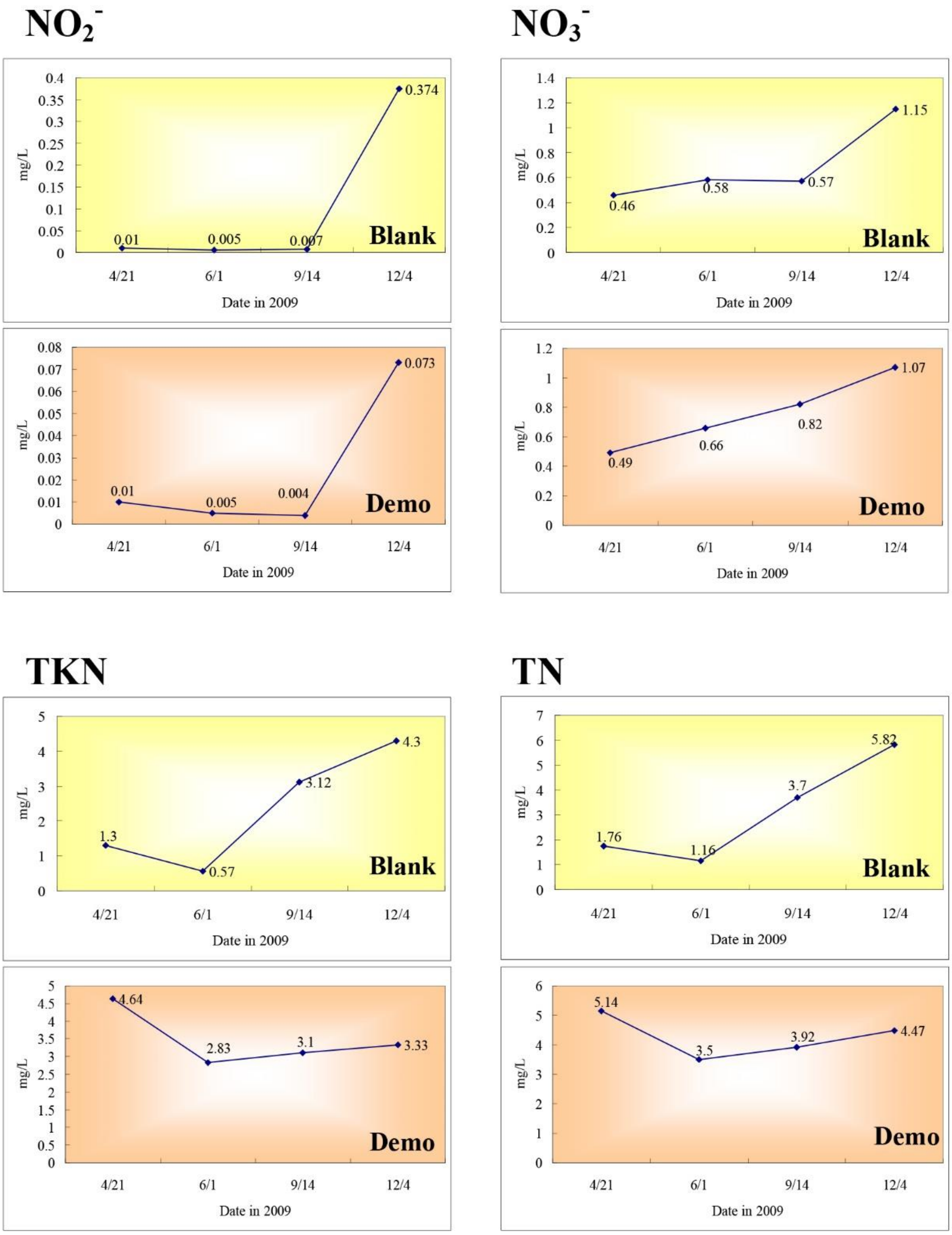

Figure 8 Water Quality Result 1

Environmental & Infrastructural Technologies, Inc.

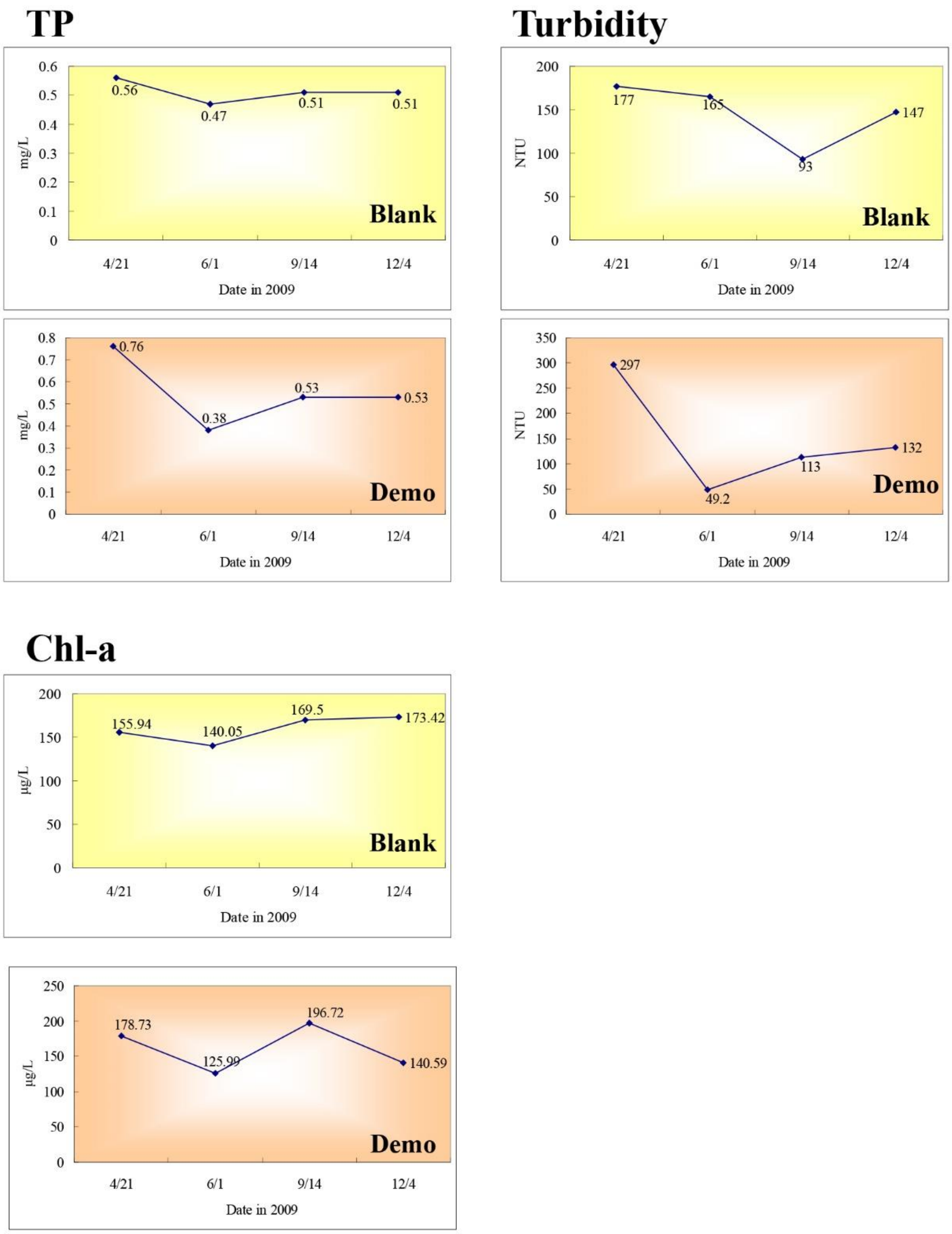

Figure 9　Water Quality Result 2

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