MICROBE-LIFT® Technology Helps Maintain High Quality Water in Prawn Hatchery in Malaysia

Location: **Fajar Prawn Hatchery, Manjung, Perak State, Malaysia**

Background: Fajar Prawn Hatchery is a 20-tank fry hatchery, which is located in the middle of Manjung District, Perak State, Malaysia. Since 2000, they hatch only White Shrimp fry. The hatchery operator Mr. Tan Kim Bak said he buys the Nauplius (see figure 2) from another company and hatches to post larvae stage and then sells to shrimp farmers.

Mr. Tan Kim Bak had been using a competitive aquaculture bacterial product for the shrimp hatchery, specifically Bacillus Plus II from Thailand. After he was approached by an international partner of Ecological Laboratories Inc., he agreed to run a comparative test between MICROBE-LIFT® technology and the competitive product.

Objective: The objective was to maintain cleaner water for healthier fry for improved growth and subsequent transfer and restocking.

Fig. 1: *Shows the facility and typical fry tank.*

Application:

MICROBE-LIFT® Formulation		BACILLUS PLUS II	
Inoculation	25ml for 4500 liter of water	Inoculation	2 g for 9000 liter of water
2nd dosing : (7 days):	25ml for 9000 liter of water	2nd application (3 days):	2 g for 9000 liter of water
		3rd application (3 days):	2 g for 9000 liter of water
		4th application (3 days):	2 g for 9000 liter of water
		5th application (3 days):	2 g for 9000 liter of water
TOTAL:	**50 ml of MICROBE-LIFT® Formulation**	**TOTAL:**	**10 g of Bacillus Plus II**

Fig. 2: *Products were applied according to manufacturer's dosage recommendation.*

Two tanks were each inoculated with 1.5 million Nauplius (shrimp larvae) on 20th March 2009.

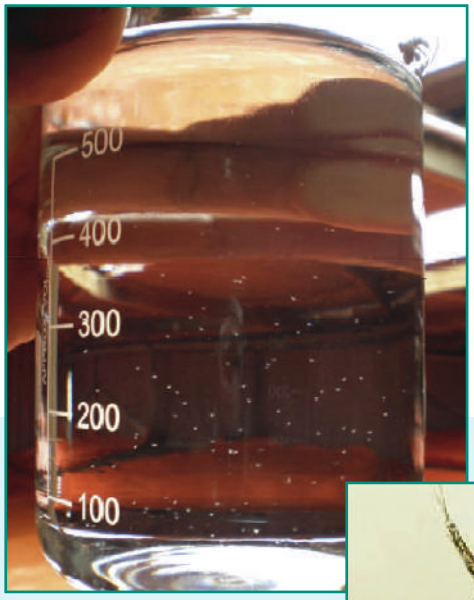
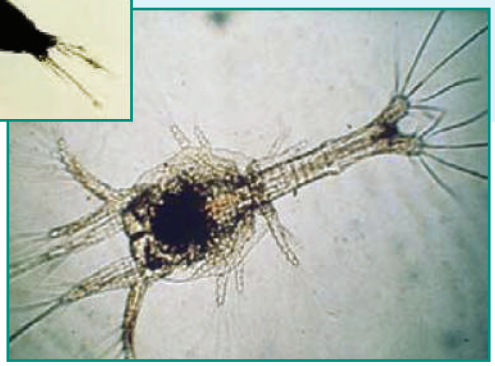


Fig. 3: *The sample shown on the left is a sample of the tank 2 hours after seeding with Nauplius, before the addition of MICROBE-LIFT® Formulation or the competitive product.*

Fig. 4: *The picture below (left) is a close up of a Nauplius under the microscope.*

Fig. 5: *Below right is a picture of the zoeal stage.*



The water remains very clear in appearance initially and after the inoculation with Nauplius.

As the larvae start to eat and grow and produce different larval stages the water will become cloudy and waste will start to settle. In the zoeal stages, swimming is accomplished with the first and second antennae, as in the naupliar stage, but these are now aided by the well-developed first and second maxillipeds. The swimming stroke is slower than that of the nauplii, the movement appears less jerky.

Characteristic of the zoeae is their continuous feeding. The culturist can judge how well the zoeae are feeding by the contractions of the digestive tract and the presence of a long trail of feces. Active feeding and a continued prompt response to a light source are indications of healthy zoeae. Towards the end of the last zoeal substage, the body becomes slightly flexed.

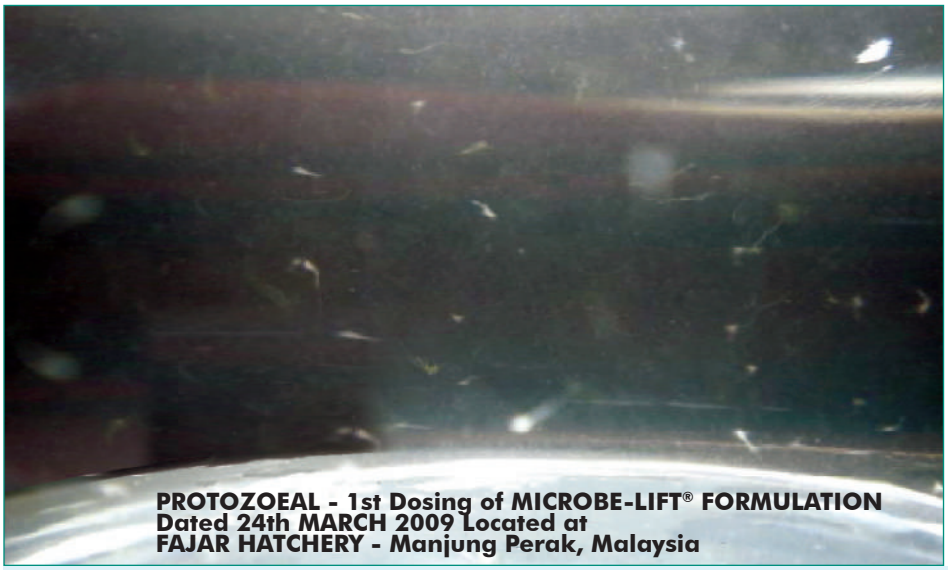


Fig.6: *Before first dosing culture had developed some cloudiness.*

Two tanks were each inoculated with 1.5 million Nauplius (shrimp larvae) on 20th March 2009.
The picture above shows the protozoeal after four days of growth with much cloudier water. The first dose of MICROBE-LIFT® Formulation (25 mls for 4500-liter hatchery tank) is added on 24 March 2009 according to manufacturer's recommendation. The competitive product is not added to its test tank for another 3 days on 27 March 2009.

Fig. 7: *At the second dosing the* ***larvae*** *are at the mysis stage and the water is starting to clear.*

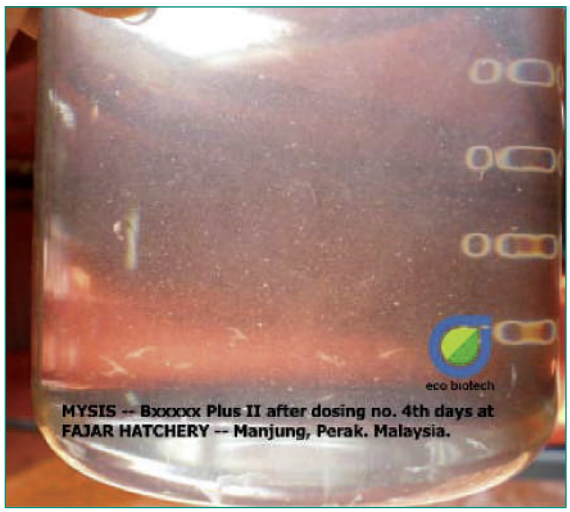


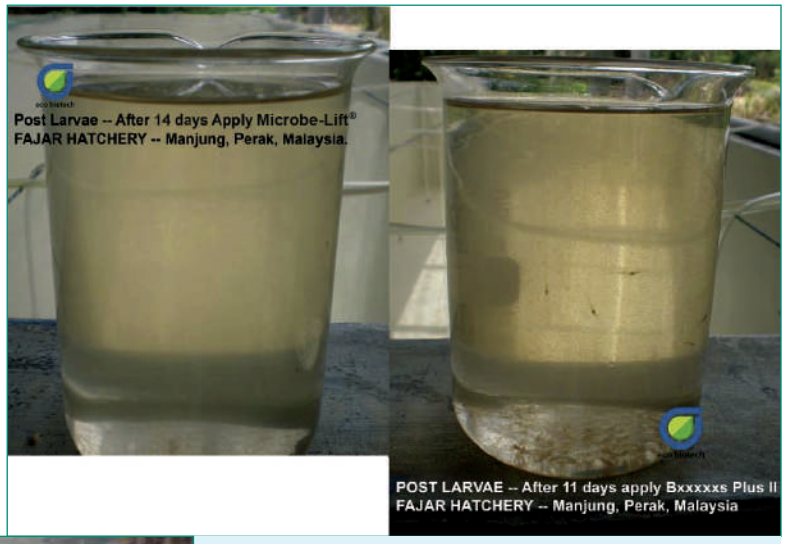
Fig. 8: *Water from competitive product tank shows turbidity & particulates.*

The picture at left shows the competitive tank sample, which is much more turbid four days after dosing.

At **Day 14** with the competitive product there is substantially more particulate suspended material and increased build-up fecal solids (dropped to the bottom in this sample) indicating poor degradation of excess food and waste.

At **Day 17** the MICROBE-LIFT® Formulation sample remains clearer than the competitive sample indicating cleaner water and a better environment for **larvae** development. There were also more **larvae** in the tank treated with the MICROBE-LIFT® Formulation.

Mr. Tan Kim Bak was pleased with the results preferring to use the Formulation.



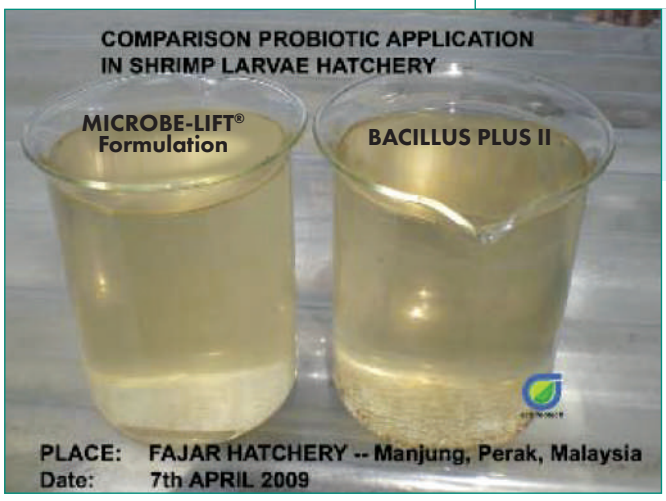


Fig.9: *Picture on the top shows the MICROBE-LIFT® Formulation at left treated while that on the right is the competitive product.*

He was also pleased that, based on past results Ecological Laboratories, Inc. has experienced, his larvae will show improved viability when shipped and transplanted to new tanks.

For more information on MICROBE-LIFT® Technology contact

Ecological Laboratories Inc.

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