



# Determining The Performance Of Microbe-Lift® In Shrimp Aquaculture In India



## INTRODUCTION

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High density commercial aquaculture farming of Tiger Prawn, pacific white prawn (Vannamei), Tilapia or Basa Shrimp and/or fish fecal matter, as well as leftover feed, pollutes the water in Aquaculture ponds, contributing to high nitrate and organic waste. The polluted water results in hypereutrophication with large quantities of decaying dead algae and organic waste from fish and/or shrimp excretion creating a thick layer of organic waste known as bottom sludge. The pond's ecological balance will be significantly disturbed when the sludge builds up reducing the water volume. This is very critical for shrimp culture, as bottom sludge can shorten the effective grow-out period, resulting in very small size shrimp at harvest. The formation of sludge can also end up in disease for the shrimps thus losing the entire harvest at times. Many shrimp ponds are experiencing extremely high mortality beyond 4 months due to the accumulation of bottom sludge. As an example, Tiger prawns only grow to about 12 to 15 grams in size when harvested at 4 months, but can increase to 30 to 35 grams when harvested at 6 months, which then commands a premium price which can be even more than two times the market price.

M/s EnviroAquaria International, the Exclusive India Distributor of **Ecological Laboratories Inc**, USA ,in collaboration with Dr Manoj Sharma of Mayank Aquaculture Private Limited conducted a pilot trial in their Aquaculture farm at Surat in Gujarat State, India during the period April to August 2013 using **MICROBE-LIFT®** technology, a worldwide used and time tested product for Aquaculture, a product of **Ecological Laboratories Inc**, USA, which is a consortium of microbes for Pond treatment.

## OBJECTIVES

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The Shrimp Farms in Surat had been using locally cultured probiotics (Bacteria) for pond treatment in their Aquaculture ponds and had been achieving satisfactory performance in water quality and shrimp yield as informed by Dr Manoj Sharma. However these probiotics/bacteria are not capable of eliminating/reducing sludge formation, a major issue faced by the farmers after the harvesting since the sludge is to be removed mechanically, which involves huge expenditure apart from the time required in doing the same and the delay in starting the next farming/crop.

**MICROBE-LIFT®** technology is a consortium of microbes unlike the locally available Probiotics which contains only few beneficial bacteria. Hence the local product is having a lower price in comparison to **MICROBE-LIFT®** the price of which perhaps may be felt costly to use.

The main objective of the trial was to establish the commercial benefits in using **MICROBE-LIFT®** which not only gives higher yields but also helps in achieving better size of the shrimp which are in greater demand for export. While using **MICROBE-LIFT®**, sludge formation is nil or negligibly small and hence there is no need of removing the sludge after the harvest to make the pond ready for the next season. This reduces the additional and unwanted expenditure and also saves time. The consortium of bacteria in **MICROBE-LIFT®** technology not only takes care of the advantages as mentioned above but also avoids the possibilities of disease and mortality. It also permits for higher stocking of the shrimp. Thus, by using **MICROBE-LIFT®**, the farmer gains in multiple folds and the cost of the material becomes negligibly small in comparison.

Key objective of the trial was to evaluate the effectiveness of **MICROBE-LIFT®** in the following segments.

- Maintaining the ecological balance of your ponds by reducing organic waste and eliminating bottom sludge
- Reducing non-beneficial bacteria and diseases through Pro-Biotic effect
- Increasing growth rate & reducing mortality
- Achieving larger prawn at harvest, commanding much higher market price
- Allowing for a higher density and lower mortality resulting in higher yield
- Reducing feed conversion ratio (FCR)- saving on feed cost
- Reducing the rate of water changes- providing for a clean environment
- Eliminating bad odor in the water, avoiding a soil smell in fish and prawns

### ABOUT MICROBE-LIFT® technology

**MICROBE-LIFT®** formulation contains a full consortium of bacteria, including aerobic, facultative, anaerobic, chemotropic and photosynthetic species. The micro-organisms in **MICROBE-LIFT®** are non-toxic and non-pathogenic, safe and non-harmful to humans, animals, plants and all types of aqua culture.

**MICROBE-LIFT®** is made up of various types of bacterial species that have been cultivated for compatibility, reproduction and synergistic growth, delivered in an active adult state. These are natural and not genetically modified. When **MICROBE-LIFT®** is added to a polluted area, the bacteria immediately revive themselves and begin to feed on the organic waste. In aquaculture bioremediation, **MICROBE-LIFT®** act as a pro-biotic and helping the shrimp/fish to digest the food more efficiently thus extracting more nutrients from the feed. These photosynthetic bacteria, along with other heterotrophic organisms in **MICROBE-LIFT®** results in the following:

1. Purifying the water and at the same time recycling the waste as a food source.
2. Increasing the yield while reducing feed costs, thus significantly enhancing the cost effectiveness of growing shrimp/fish resulting in greater profit.
3. Maintaining the required bloom of water favorable for the fishes to grow.
4. Resistant to green water events.
5. Elimination of sludge formation.

*Dr Manoj Sharma & Mr NK Menon at farm site*



## TRIAL PROCEDURE

Two tiger prawn ponds and four vannamei shrimp ponds were treated with **MICROBE-LIFT®** from April to July 2013 based on the manufacturer's dosing recommendation. Two of the vannamei ponds were with more stocking than the farm's standard practice of about 100,000 stocking per pond for a hectare size with a water depth of 1.5 mts. The remaining non-treated pond serves as control during the trial. Comparisons were made with the performance as per past farming/harvest treatment.

The standard parameters such as NH<sub>3</sub>, pH, DO, salinity, water color and soil quality were regularly checked and measured as per farm standard.

Manufacturer's dosing recommendation for a 1 hectare pond is as follows:-

Week No.	Dosing	Remarks
2 or 3	1 gallon	Avoid dosing in wk 1
4 to 10	0.75 gal / wks	May do 0.5 gallon per week
12 to 20	1.5 gal / 2 wks	May do 1 gallon per 2 week

## TRIAL RESULTS

The actual dosing and various parameter measurements for the 6 ponds are tabulated in appendix 1. The shrimp harvest was done from 1st week of Aug 2013 onwards.

The water quality of both Vannami and Tiger ponds were found to be of good quality. The sludge formation was nil/negligible.

Dr Sharma is extremely happy with the trial results. All the time he was perhaps under the impression that it is yet another probiotic. However the results from the trial ponds compelled him to conclude that **MICROBE-LIFT®** is not yet another simple probiotic. The results according to Dr Manoj Sharma are praiseworthy with respect to the following:

- 1) Yield is very good.
- 2) No increase in mortality despite more stocking density.
- 3) There is no sludge at all
- 4) Absolutely no smell from the pond after draining the entire water while harvesting.
- 5) Above all the size of the shrimp is very big, both Vannamie and Tiger. (32 gms and above per shrimp)
- 6) The taste of the shrimp is very good.
- 7) The color of the Vannami shrimps are found to golden brown, which otherwise is more or less white in color.



Mr Menon of EnviroAquadria at the farm during harvest



Tiger prawn at harvest



Vannamei Shrimp at harvest

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Trial pond



Control Pond



Sludge after harvest in all control ponds



Trial pond after harvest – no sludge



Bottom of treated pond – No sludge



Several farmers whose stock density varies from 30 to 50 per sq m is now using **MICROBE-LIFT®** and found the product is very exceptional in performance.

## Note:-

This trial was conducted at Dr Sharma's farm where stock density is relatively low compare to other Asian countries. A product launch at Surat was carried out where more than 150 shrimp farmers attended.

For more information on **MICROBE-LIFT®** Technology contact

**Ecological Laboratories Inc.**

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