



International Journal Of
**Recent Scientific
Research**

ISSN: 0976-3031
Volume: 7(5) May -2016

EXPERIMENTAL SHRIMP CULTURE IN LINED PONDS

Sudhan, C., Deepika, S., Ranjithkumar, K., Surya, T
and Ruby, P



THE OFFICIAL PUBLICATION OF
INTERNATIONAL JOURNAL OF RECENT SCIENTIFIC RESEARCH (IJRSR)
<http://www.recentscientific.com/> recentscientific@gmail.com



ISSN: 0976-8031

Available Online at <http://www.recentscientific.com>

International Journal of Recent Scientific Research
Vol. 7, Issue, 5, pp. 11228-11230, May, 2016

**International Journal of
Recent Scientific
Research**

Research Article

EXPERIMENTAL SHRIMP CULTURE IN LINED PONDS

Sudhan, C^{1*}, Deepika, S¹, Ranjithkumar, K², Surya, T¹ and Ruby, P¹

¹Fisheries College and Research Institute; Tamil Nadu Fisheries University;
Thoothukudi, Tamil Nadu

²Central Institute of Fisheries Education; Mumbai

ARTICLE INFO

Article History:

Received 16th February, 2016

Received in revised form 24th March, 2016

Accepted 23rd April, 2016

Published online 28th May, 2016

Keywords:

Shrimp; Biosecurity measures;
Remedial measures and Sustainable
aquaculture.

ABSTRACT

Shrimp continues to be the single largest commodity in value terms, accounting for about 15 percent of the total value of internationally traded fishery products in 2012. The demand and supply for vannamei shrimp exports were augmenting from US\$ Million 3210.94 to 3709.76 in 2013-14 and 2014-15 respectively. The top most candidate species (with higher meat yield ~ 66-68%) in mariculture, *Litopenaeus vannamei* (Penaeid shrimp) native to the Eastern Pacific coast were selected with Biosecurity measures; pre-stocking; Pond and feed management practices for experimental culture. PL8 stage seeds were stocked in different High Density polyethylene lined ponds for 120 days of culture. Based on the experience, this paper would discuss on the topic related to background of the shrimp culture and problems faced followed by the remedial measures for the sustainable aquaculture in India.

Copyright © Sudhan, C et al., 2016, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Pond had been prepared as per the standard procedure and lined with tarpaulin sheet; by taking pond measurements and the details of the pond along with stocking density (Strict adherence to the guidelines of CAA) and days of culture were notified on the pond specification plate/ name board for concurrent reference to students and visitors located at Tharuvaikulam, Thoothukudi district of Tamil Nadu.

The top most candidate species (with higher meat yield ~ 66-68%) in mariculture, *Litopenaeus vannamei* (Penaeid shrimp) native to the Eastern Pacific coast were selected for experimental culture due to wide salinity tolerance (0.5 to 45 ppt), wide range of temperature tolerance (low temperatures of up to 15 degree centigrade), availability of specific pathogen free seeds, high stocking density, column feeder, high survival rate (50-60%) and pelagic swimmer. On 15th October 2014 by night 9.00 PM, The procured seeds have been stocked at one corner of the ponds after acclimatization. The process acclimatization for 1 hr by splashing the water, tied band was removed from the bag and pond water was allowed inside the bag, seeds were released into the ponds.



Figure 1 *Litopenaeus vannamei*

MATERIALS AND METHODS

This study was conducted in Maritech Research Centre, Tharuvaikulam, Fisheries College and Research Institute, Thoothukudi, Tamil Nadu. The duration of this study was about 120 days. This study starts with Pond Preparation (Drying; Desilting; Biosecurity Measures like crab fencing and bird fencing; Water Filling & Chemical application); Seed Lifting; Seed Stocking; Pond Management (Aerator Installation & Check Tray Installation); Water Quality Management; Feed

*Corresponding author: **Sudhan, C**

Fisheries College and Research Institute; Tamil Nadu Fisheries University; Thoothukudi, Tamil Nadu

Management (Danya Babu. Ravuru et al., 2014) followed by sampling and harvesting (Karuppasamy et al., 2013).

RESULTS AND DISCUSSIONS

The sampling was done with cast net after 40th day of stocking and it was done weekly once from 28/11/2014 to 19/01/2015. Totally 9 times the sampling was done in both ponds. Application of various chemical includes hydrated lime, dolomite, calmag, soda mix, sea fresh, super PS and Zymetin. In these chemicals, sea fresh act as DO enhancer; super PS act as water probiotic; Zymetin act as a gut probiotic that enhances the culture period and growth rate of the shrimps.



Figure 2 Sampling of shrimps by cast net

After 110th day the shrimps were harvested with the help of drag net. Two troughs were filled with fresh seawater with flake ice for ice killing the harvested shrimp. During the time of harvesting pond sides were checked & visibility of shrimps was also checked for physical verification.



Figure 3 Harvested Shrimps

Advantages of lined sheets

1. Easy uptake of all chemicals applied into the pond
2. Removal of waste by central drainage system
3. The harvested animal was found to be clear appearance without any physical damage
4. Easy harvesting even with drag net and cast net (sampling)
5. Easy Maintenance the sides of the pond

Problems Faced

Current fluctuations: This was one of the major problems faced during the culture because as the current fluctuations are most common in the coastal areas. In case of shut down, the alternate use of generator was useful to supply the power required to run the aerator. Yet, continuous running of generator was not followed. It resulted in depletion dissolved oxygen (i.e. below 2.7 mg/l).

Temperature fluctuations: Due to cloudy weather and rainy days maintaining temperature over a period of 5 to 10 days was too difficult. *L.vannamei* seeds could tolerate wide range of high temperature fluctuations but couldn't tolerate narrow range of low temperature fluctuations. For about 5 to 10 days, temperature was in the range of 22 to 24°C thereby resulting in 2 to 4 % of mortality was observed in check tray monitoring and physical verification of pond bottom.

Difficult to maintain Water quality: As the nature of the pond was lined, maintain water temperature and other water quality parameters like pH, Salinity, Alkalinity, Hardness, calcium and Magnesium levels are critical high or low in relation with weather conditions. As the available calcium and other major minerals are quite less that results in batch molting of the shrimps which could further promotes the cannibalism among the stocks.

Difficult to exchange water: As pond bottom was lined, the unused feed, fecal or excreta, dead algae and other microorganisms are fails to disintegrate as bottom soil was not present. If the soil was present, the accumulated toxic gases like ammonia, hydrogen sulphide and nitrite could escape as free nitrogen or less toxic nitrate by nitrogen cycle.

CONCLUSION

The calculated Total expenditure, Total Revenue, Net profit and BCR were found to be Rs. 221231.61, Rs. 234740.00, Rs.13508.39 and 1.06 respectively. By designing optimal technical parameters and pond managements like drying, liming, water management, addition of carbon sources, feed management, health management (Biosecurity measures), harvest and post harvest and cost of production would give the maximum turn over with sustainable production. The major issues to be considered are biosecurity measures and maintenance of water quality after calibrating the instruments

through constant monitoring or by automatic water quality registering machines that also requires higher technical knowledge related to climatic factors like temperature and weather pattern; feed management; algal bloom, stocking density and stress management of culture species to achieve better production in sustainable manner.

References

Karuppasamy, A., Mathivanan, V. and Selvisabhanayakam (2013). Comparative Growth Analysis of *Litopenaeus Vannamei* in Different Stocking Density at Different Farms of the Kottakudi Estuary, South East Coast of India. *International Journal of Fisheries and Aquatic Studies*; 1(2):40-44.

Danya Babu. Ravuru and Jagadish Naik. Mude (2014). Effect of density on growth and production of *Litopenaeus vannamei* of brackish water culture system in summer season with artificial diet in Prakasam district, India. AIJRFANS 14-108.

https://www.nabard.org/english/culture_of_whitelegged_shrimp4.aspx

<http://www.vannamei101.com/photo.html>.

How to cite this article:

Sudhan, C *et al.* 2016, Experimental Shrimp Culture In Lined Ponds. *Int J Recent Sci Res.* 7(5), pp. 11228-11230.

T.SSN 0976-3031



9 770976 303009 >