Water quality, and microbial community in the polyculture system of white shrimp, *Litopenaeus vannamei.*

Mohammad Khan*

Department of Aquaculture, Faculty of Fisheries and Marine, Universitas Airlangga, KampusCUNAIR, Jl. Mulyorejo Surabaya 60115, Indonesia

Abstract

Shrimp polyculture has not been common practise because it's mostly limited to extensive aquaculture systems. Low intensive shrimp polyculture systems may be replaced by a combination of shrimp-fish polyculture and biofloc technology. The purpose of the enclosed trial was t determine whether *Litopenaeus vannamei* and mullet co-culture on a biofloc basis produces synergistic effects at the amount of water quality, animal production, and nutrient budgets compared to co-culture and/or biofloc based monoculture.

Key words: Integrated production, Microbial community, Shrimp poly-Culture.

Introduction

With the increasing population, the demand for aquatic products is increasing and also the artificial mariculture industry has developed rapidly. However, the direct discharge of aquaculture tail-water containing feces and residual bait have caused serious environmental problems including eutrophication, imbalance of carbon/nitrogen (C/N) ratio, and therefore the outbreak of harmful bacteria and/or microalgae in coastal waters It absolutely was indicated that the national pollution of total nitrogen, total phosphorus, chemical oxygen demand, copper, and zinc caused by marine aquaculture [1].

The shrimp farming industry globally faces numerous challenges, most significantly various viral, bacterial and fungal diseases; also, the requirement for added, novel ingredients that may be needed to manufacture and support a growing demand for aquafeeds; and environmental impact, markets and investment issues. Nitrite is more toxic at low salinity, so as a security measure, nitrite levels should be kept below 1.0 mg/L within the culture of *L. vannamei*. However, concentrations <0.4 mg/L, nitrite is toxic, causing stress on the shrimp and increasing their vulnerability to disease [2].

At present, shrimp farming in Hainan province is performed commonly in open pond, producing solid particles, dissolved organic carbon and nutrients (nitrogen and phosphorus), etc. This seriously violates the goals of the development of the Hainan trade Port and therefore the marine ecological civilization demonstration zone. For the sustainable development of the aquaculture industry, it's necessary to construct green and healthy shrimp farming systems [3].

Farmed shrimp is taken into account as a source of healthy food by a range of health experts thanks to their many nutritional benefits, including great source of minerals, vitamins, high-quality protein, and lipids. additionally, farmed shrimp help to fulfill the growing demand for animal protein, and currently accounts for a minimum of 55% of the shrimp produced globally to take care of the momentum for growth, the industry has to intensify, thereby maximising production from limited resources [4].

However, intensification can cause environmental and social impacts if not done. Therefore, the success of sustainable intensive systems. It is essentially obsessed with effective and efficient water quality management during this sense, it's crucial to take care of water quality (WQ) within certain ranges for optimal health and growth of shrimp [5]. There are several WQ parameters with importance in commercial shrimp farms, but those commonly measured in super-intensive conditions may include temperature, dissolved oxygen, salinity, pH, total ammonia, nitrite, nitrate, settling solids, total suspended solids, alkalinity and orthophosphate.

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***Correspondence to:** Mohammad Khan, Department of Aquaculture, Faculty of Fisheries and Marine, Universitas Airlangga, Kampus CUNAIR, Jl. Mulyorejo Surabaya 60115, Indonesia, E-mail: mohamad.khan@fpk.unair.ac.id

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