

ASSESSMENT OF BRACKISH SHRIMP FARMING IN SARAWAK AND ITS IMPACTS TO THE ENVIRONMENT

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Abstract

Water discharges from shrimp farms have been known to contain high loads of nutrients and suspended solids. Although the receiving water bodies have a capacity to dilute and assimilate the pollutant to a certain extent, eutrophication and other environmental problems could occur if that capacity is exceeded. The aim of this study was to assess the effects of different management practices in two brackish shrimp farms in Sarawak and input of nutrients into the surrounding environment. Water quality (physical and chemical) was monitored in two commercial shrimp farms, which practised open system and semi-closed system, and in estuaries adjacent to the farm. Nutrients flushed from the shrimp ponds into the receiving waters during water exchange were also quantified. Results showed that in both farms, pond water have relatively higher concentrations of ammonia nitrogen, total suspended solids and excessive growth of phytoplankton as the shrimp culture progressed. Water exchange rate of 15% of pond water volume in semi-closed system was sufficient in improving water quality of the pond, instead of 30% of pond water volume. The results of this study also indicated that semi-closed system of shrimp farming is more environmental friendly compared to the open-system based on water exchange practice and the contributions of nutrients to the adjacent water bodies. Farms practising daily water exchange is more destructive to the environmental because they discharge more pollutants into the receiving waters.

Introduction

Shrimp aquaculture has grown rapidly world wide in the past three decades with production increasing from 80,000 metric tons in 1982 to over 800,000 metric tons in 1999 (Boyd, 1999). In Malaysia, the number of shrimp farms and farming areas has also increased steadily over the years. Pond yields have increased and production of up to 15 tons/ha/year