

Thesis Title The Study of BOD Loading And Some Parameters of
Water And Soil Quality From Intensive Marine
Shrimp Farm With Varying Stocking Rates

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Abstract

Water quality , soil quality , plankton and water drainage from 20 intensive shrimp ponds , 4 inlet canals and 1 outlet canal were studied at Kung Krabeen Bay Royal Development Study Centre , Tambol Klongkhud , Amphur Thamai Chantaburi Province in March - August 1991. Shrimp ponds were divided into 2 groups, stocking rate less than 60 pl/m² (group 1) and equivalent to or more than 60 pl/m² (group 2).

The results of water and soil quality in the two groups

of shrimp ponds showed the significant ($p < 0.05$) difference in salinity, temperature, nitrite-nitrogen, ammonia-nitrogen, orthophosphate, dissolved oxygen, BOD and transparency. But the others, namely pH, silicate, soil-pH and organic matter were not significantly different ($P < 0.05$).

Seventynine species of phytoplanktons were found, which consisted of 19 species of phylum Chlorophyta, 44 species of phylum Chrysophyta, and 16 species of phylum Cyanophyta. Sixtynine species of zooplankton were found, which consisted of 1 species of phylum Annelida, 2 species of phylum Arthropoda, 2 species of phylum Coelenterata, 1 species of phylum Echinodermata, 3 species of phylum Mollusca, 52 species of phylum Protozoa and 8 species of Phylum Trocheimintnes. Trichodesmium sp. of phytoplankton and Naked Dinoflagelated of zooplankton were dominant species.

Average of quantity of monthly discharge waste water and monthly BOD loading of group 2 were more than the loading of group 1. Average quantity of discharge waste water were 10,323.0 (group 1) and 14,311.8 (group 2) ton/rai/crop. Average quantity of BOD loading were 87.1 (group 1) and 140.5 (group 2) kg/rai/crop. BOD loading was significantly related to stocking rate and the average BOD loading of waste water from 1 rai of shrimp pond was equal to BOD loading of domestic waste water of 17 persons.

The BOD got the significant relation to salinity (sal), nitrite-nitrogen (NO_2), dissolved oxygen (DO), silicate (SiO_3), transparency (tran), as

$$\text{BOD}_5^{20} = 16.47 + 0.33\text{DO} + 2.59\text{SiO}_3 - 0.18\text{sal} - 4.64\text{NO}_2 - 0.09\text{tran}.$$

And the BOD_5^{20} also directly varied with feeding rate ($p < 0.05$).