

Warunee Sea-ia 2006: Effects of *Bacillus* sp. on Water Quality and Production of Black Tiger Shrimp (*Penaeus monodon* Fabricius) Cultured in Low Salinity Water. Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology.  
Thesis Advisor: Assistant Professor Chalor Limsuwan, Ph.D. 95 pages.  
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This was a study of the effect on water quality and yield of adding *Bacillus* sp. to ponds in which black tiger shrimp (*Penaeus monodon*) were raised in a closed system using water with salinity of approximately 7 ppt. In the first experiment black tiger shrimp at postlarvae stage 15 were stocked to four ponds (two experimental ponds and two control ponds) with area of 4,800 m<sup>2</sup> (3 rai) each at a density of 41 shrimp/m<sup>2</sup>. Spores of five species of *Bacillus* sp. (*Bacillus amyloliquifaciens*, *B. megaterium*, *B. licheniformis*, *B. pumilus* and *B. subtilis*) were added to the water in the experimental ponds. After the shrimp were raised for 105 days the yield of the experimental ponds was 733.34 kg/rai. The shrimp weight was 15.44 g and the survival rate was 71.73%. In the control ponds the yield was 609.17 kg/rai. The shrimp weight was 15.77 g and the survival rate was 57.88%. There was no statistically significant difference (p<0.05) in water quality between the experimental and control ponds. The average net profits from the ponds in which the bacteria were added came out to 14,661.67 baht/rai, compared to just 2,615 baht/rai from the control ponds. In the second experiment black tiger shrimp were raised at density of 40 shrimp/m<sup>2</sup> in four ponds with an area of 3,200 m<sup>2</sup> (2 rai). No bacteria were added to the two control ponds. For the two experimental ponds *Bacillus* sp. were added. After the shrimp were raised for 126 days the shrimp yield of the experimental ponds was 841.75 kg/rai. The shrimp weight was 12.03 g and the survival rate was 83.28 %. In the control ponds the average yield was 833.25 kg/rai. The shrimp weight was 13.91 g and the survival rate was 77.94%. There was no statistically significant difference (p<0.05) in these values. The average net profit from the ponds in which the bacteria were added came out to 15,594 baht/rai, compared to 11,204.5 baht/rai from the control ponds. The water quality was appropriate for raising shrimp in both the experimental ponds and the control ponds throughout the culture period. However, total ammonia was higher in the control ponds than the experimental ponds. The results of this study indicated that when raising black tiger shrimp under low-salinity conditions in a closed system with infrequent water changed, the addition of *Bacillus* sp. to the water could help control total ammonia, leading to a higher survival rate and greater yield and profits.

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Thesis Advisor's signature

