

Vutthichai Oniam 2011: Study on Mortality Causes of Cultured Blue Swimming Crab (*Portunus pelagicus* Linnaeus, 1758) in Earthen Ponds. Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Associate Professor Wara Taparhudee, Ph.D. 134 pages.

This study was to study on mortality rate of blue swimming crab (*Portunus pelagicus*) due to cannibalism, and to study on effect of pond bottom soil properties on growth and mortality rate of cultured crab. In the experiments, crabs were raised under simulated earthen pond conditions in 1.5 x 2.5 m² concrete ponds, at a density of 3 crabs/m² for 120 days. Initial average carapace width, carapace length and body weight of crab were 1.80±0.23 cm, 0.97±0.16 cm and 0.50±0.16 g, respectively. Crabs were fed with shrimp feed. In the first experiment, three models used were a normal culture system (treatment 1), crabs raised individually in 0.5 x 0.6 m² plastic net fences at 12 fences/pond (treatment 2), crabs raised with 90 degree bent plastic plates (20 cm x 30 cm x 10 cm) as a shelter on pond bottom, at a density of 1 shelter/m² (treatment 3). All treatments had three replicates. Results showed that the mortalities of the crab caused by cannibalism (during the culture period of 1st, 2nd and 3rd models) were 0.00-21.42%, 0.00% and 0.00-9.39%, respectively. The death rate caused by other factors was 0.00-6.48% in all treatments. This study contends that during the first 60 days of the culture period, the leading factor of high mortality of the crabs was cannibalism, and that after 90 days of culture, other factors outweighed cannibalism. In addition, the shelter on pond bottom was important for reducing cannibalism especially, during the first 45 days of the culture period, crabs raised as a shelter was significantly lower mortality rate due to cannibalism than the normal culture systems (P<0.05). In addition, the study on changing properties of pond bottom soil on the crab raised in simulated earthen ponds with old soil substrate of bottom area (treatment 1) and new soil substrate of bottom area (treatment 2). Results showed that pond bottom soil in treatment 1 had a significantly higher ammonia concentration and pH compared to those treatment 2 (P<0.05). While concentrations of sulfide and organic matter in both treatments were not significantly different (P>0.05). The average daily growth (ADG) and survival rate of the crab in both treatments were not significantly different (P>0.05). However productivity per area showed that the crab raised in treatment 1 had a significantly lower productivity (0.06±0.00 kg/m²) and higher FCR (4.01±0.11) compared to those treatment 2 had productivity at 0.11±0.02 kg/m² and FCR at 3.41±0.23 (P<0.05). This study indicated that ammonia concentration and soil pH in pond bottom soil show the effect on productivity and FCR.

Student's signature

Thesis Advisor's signature