

Saowarat Suksamran 2007: Application of Electrolysis Water Treatment Technique in a *Litopenaeus vannamei* Boone, 1931 Closed Hatchery System. Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Assistant Professor Wara Taparhudee, Ph.D. 137 pages.

The application of electrolysis water treatment technique in a Pacific white shrimp (*Litopenaeus vannamei*), closed hatchery system was investigated in 2 experiments. The first experiment studied the optimal electric current and water flow rate for water treatment. The second experiment compared the nursing systems applying the open system using chlorine powder to the closed hatchery system with electrolysis system and sand filtration for water treatment in 3 consecutive crops. The results of the first experiment found that the optimal flow rate of water into the electrolysis system was 2.5 l/min, with an applied amperage of 1.6 A that produced 11.39 mg/l of Chlorine. This level was suitable for water treatment and could be applied in the *Litopenaeus vannamei* closed hatchery system. In the second experiment, water quality parameters, number of bacteria, survival rates and growth rates of the two nursing systems were not significantly different ( $P>0.05$ ) except for average final weight gain of the larvae in the third crop of the open system was  $0.0097\pm0.0031$  g which was statistically greater than in the closed system of  $0.0040\pm0.0015$  g ( $P<0.05$ ). However, the closed hatchery system with electrolysis system could reduce more than 95% of total ammonia, 75% of nitrite-nitrogen and reduced greater than 95% of the number of *Vibrio* spp. and total bacteria in the water. The costs of electrolysis system were lower than using chlorine powder for water disinfection.

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Thesis Advisor's signature

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