Trin Suwanmanon 2010: Nitrate Removal in Aquaculture with Autotrophic Denitrification Process by *Thiobacillus denitrificans*. Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Associate Professor Wara Taparhudee, Ph.D. 145 pages.

The study on nitrate removal in aquaculture with autotrophic denitrification process by *Thiobacillus denitrificans* consisted of four experiments. The 1st experiment was to study efficiency of *T. denitrificans* on nitrate removal using different sulfur-limestone ratios i.e. 0:4, 1:3, 1:2, 1:1, 2:1, 3:1 and 4:0. The initial nitrate concentration was 50 mg NO_3^--N/L. The result showed that the ratio 1:1 could significantly reduce nitrate at the fastest rate within 96 hours compared to the others ($P<0.05$). The 2nd experiment was to study optical density (OD) of *T. denitrificans* from 0.0 to 1.0 on nitrate removal which it found that the OD of 1.0 could reduce 50 mg NO_3^--N/L at the fastest rate within 96 hours. The efficiency of nitrate removal declined when the OD decreased. The 3rd experiment was to study effect of salinity levels i.e. 0, 10, 20 and 30 ppt on nitrate removal by *T. denitrificans*. The result indicated that the salinity level of 0 ppt could reduce 50 mg NO_3^--N/L fastest rate within 96 hours which the efficiency of nitrate removal declined when the salinity level increased. The last experiment was to study efficiency of *T. denitrificans* on nitrate removal in fancy carp (*Cyprinus carpio*) aquaria in 30 days. The experiment was divided into two treatments: the control, column without *T. denitrificans*, and the treatment, column with *T. denitrificans*. It was found that the nitrate and ammonia concentrations in the control were significantly higher than the treatment ($P<0.05$) while the nitrite concentration of the treatment was increased in the first three days of the experiment after that it was decreased which was significantly different compared with the control. Additionally, the results showed no significant difference ($P>0.05$) of dissolved oxygen (DO) and pH levels between the treatments. After finished the experiment, average final weight, average final total length and survival rate of the treatment was significantly greater than the control ($P<0.05$).

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