

Wipada Pingasorn 2007: Efficiency of Using Vetiver for Treating Wastewater from Shrimp Farm. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Sombun Techapinyawat, Ph.D. 138 pages.

Four vetiver ecotypes (*Vetiveria zizanioides* (L.) Nash.), i.e., Phraratchatan, Srilangka, Songkhla 3 and Suratthani were used for wastewater treatment. Shrimp farm wastewater was alternately flooded into the vetiver lots for 7 days and drained for subsequent 7 days. Wastewater after treatment were collected for physical evaluation, as well as the growth and nutrients absorption of the vetiver plants. Considering the growth of 4 vetiver ecotypes in wastewater from shrimp farm at harvest time (16 weeks), Suratthani ecotype was significantly superior in height (150 cm), shoot weight (93.55 g/clump) and biomass (112.54 g/clump), but not different in the number of tiller (20.6 tiller/clump). Phraratchatan ecotype, on the other hand, gave the highest root length (44 cm) and root weight (21.71 g/clump) while Srilangka ecotype and Songkhla 3 ecotype had no superior characters compared to others. As for nutrients absorption, Phraratchatan ecotype gave the highest uptake of nitrogen in the shoot at 692.24 mg/clump, root at 150.42 mg/clump and highest uptake of phosphorus in the root at 28.637 mg/clump. Songkhla 3 ecotype, on the other hand, gave the highest uptake of phosphorus in the shoot of 106.125 mg/clump.

As for wastewater treatment, Phraratchatan ecotype could efficiently increase dissolved oxygen to 35.92 % and remove nitrate, nitrite, total phosphorus, BOD and chromium at 43.50, 64.42, 86.13, 57.89 and 76.66 %, respectively. Srilangka ecotype effectively removed total suspended solids, turbidity and iron at 58.24, 54.00 and 66.75 %, respectively. Songkhla 3 ecotype, however, effectively removed electrical conductivity, total dissolved solids, copper and sulphates at 12.81, 12.37, 44.14 and 58.33 %, respectively. Suratthani ecotype, on the other hand, could remove total nitrogen and salinity at 43.33 and 24.05 %, respectively. It is suggested that Phraratchatan ecotype and Suratthani ecotype are most effectively for treating wastewater from shrimp farm, as seen from their abilities to increase dissolved oxygen and remove total nitrogen, total phosphorus, BOD, and salinity which are the main contamination of shrimp farm wastewater.

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Thesis Advisor's signature

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