

Waraporn Kiatsirianan 2007: Using Vetiver (*Vetiveria zizanioides* (L.) Nash.) for Chicken Farm Wastewater Treatment at Kasetsart University. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Sombun Techapinyawat, Ph.D. 108 pages.

Four vetiver grass (*Vetiveria zizanioides* (L.) Nash.) ecotypes, i.e., Srilanka, Songkhla 3, Surat Thani, and Indonesia were used to treat chicken farm wastewater by hydroponic growth. Considering the most damaging factors (total phosphorus, total nitrogen, BOD and dissolved oxygen) contributed to this type of wastewater, Songkhla 3 was found to be highly effective in reducing total nitrogen (42.65 %), and total phosphorus (49.14 %), while Indonesia was best in reducing BOD (58.58 %) and increasing dissolved oxygen (24.96 %). In addition, Songkhla 3 could also reduce total dissolved solid, electrical conductivity, turbidity and nitrate at 28.07, 29.36, 44.89 and 42.61 %, respectively, but Surat Thani was highly effective in reducing total suspended solid, nitrite, iron and chlorophyll at 51.79, 38.71, 67.27 and 47.60 %, respectively. All four vetiver ecotypes were at their best in wastewater treatment when they reached 12 weeks of growth but 16 weeks for absorbing nitrogen and phosphorus. In this regards, Indonesia performed accumulating best in nitrogen in shoot and root at 278.99 and 157.44 mg/clump, respectively, and phosphorus in shoot and root at 69.63 and 44.22 mg/clump, respectively. As for their growth, they also reached their maximum growth at 16 weeks. Indonesia was found to reach the height of 123.00 centimeters, root length of 10.20 centimeters, shoot weight of 23.33 g/clump, root weight of 14.27 g/clump and biomass of 37.60 g/clump, but maximum number of tillers of 11.20 tiller/clump was found in Songkhal 3. It is therefore, recommended to use Songkhal 3 and Indonesia for best result in treating chicken farm wastewater.

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Thesis Advisor's signature

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