

Pimpak Heepngoen 2008: Biodegradation and Bioremediation of Atrazine Contaminated Soil. Master of Science (Agriculture), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Mrs. Kannika Sajjaphan, Ph.D. 90 pages.

An atrazine-degrading bacterial isolate, strain ADB was obtained from soil in a sugarcane field of Cane and Sugar Research and Development Center at Kasetsart University, Kamphaeng Saen Campus. Analysis of 16S ribosomal RNA indicated that strain ADB had 99% sequence similarity to *Arthrobacter* sp. Strain ADB containing *trzN*, *atzB* and *atzC* genes for atrazine catabolic genes, was able to use atrazine as sole nitrogen source for growth. Moreover, the soil microcosm study was used to evaluate the potential of the strain ADB in bioremediation of atrazine contaminated soil with different conditions (amendment with citrate, $(\text{NH}_4)_2\text{SO}_4$ or both citrate and $(\text{NH}_4)_2\text{SO}_4$). The atrazine dissipation was observed to be highest 100% of concentration of atrazine 150 mg atrazine k^{-1} of soil (ppm) with all treatments within 1 week. However, the atrazine dissipation was observed to be 28% of concentration of atrazine 150 mg atrazine k^{-1} of soil in the control. Additionally, biodegradation of atrazine in contaminated soil by adding bioprocessed materials (animal manure, compost or biogas slurry) was investigated. The results suggest that atrazine degradation occurred in soil supplemented with animal manure and control. However, the atrazine degradation was inhibited by adding with bioprocessed materials and citrate.

Student's signature

Thesis Advisor's signature

____ / ____ / ____