

Patcharanut Chudongkaew 2014: Pickled Green Mustard Factory Wastewater Treatment by Deacidification Using Limestone in Combination with Grass Filtration System and Constructed Wetland of The King's Royally Initiated Laem Phak Bia Environmental Research and Development Project. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Kanita Tungkananuruk, M.Sc. 100 pages.

Pickled green mustard products are food preservation by fermentation process. The main raw materials in production process were green mustard, sugar and salt. Therefore, important problem for environment was wastewater from production processes that had high amount organic content and acidity. This research aims to reduce acidity of pickled green mustard factory wastewater by limestone and reduce organic content by grass filtration system and constructed wetland of The King's Royally Initiated Laem Phak Bia Environmental Research and Development Project with using coconut shell charcoal as adsorbent. The results were found that soaking limestone 60 kg into wastewater 60 L for 9 days that effective in reducing acidity to pH 6.7. From batch experiments that the highest removal efficiency percentage of color (70.80%) turbidity (78.28%) and COD (70.00%) were achieved from coconut shell carbon 12g per 50 mL of wastewater and contact time 5 days. The adsorption model was conformed to both Langmuir and Freundlich isotherm. Furthermore, it was found that the suitable ratio by weight of coconut shell carbon to soil was 1:10. The continuous flow experiments were investigated by packing growing materials and wastewater treatment similar to the grass filtration and the constructed wetland system. The results were revealed that the grass filtration system gave the removal efficiency percentage of color (71.19%) turbidity (66.14%) and COD (85.00%) better than the constructed wetland. Therefore, the filtrated lysimeter techniques experiments by simulating the grass filtration system were carried out by comparing growing material between soil and coconut shell charcoal mixing with soil and growing *Cyperus corymbosus* Rottb. and *Typha angustifolia* Linn. It was found that coconut shell charcoal mixing with soil and growing *Typha angustifolia* Linn had the good removal efficiency percentage of color, turbidity and COD at 97.92, 91.79 and 91.25 respectively.

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Thesis Advisor's signature

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