

Jutamas Kaewsuk 2006: Treatment of Dairy Wastewater Using Photosynthetic Bacteria in Submerged Membrane Bioreactor. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Mr. Monthon Thanuttamawong, Ph.D. 124 pages. ISBN 974-16-1872-7

This research studied the kinetic coefficients of dairy wastewater degradation by photosynthetic bacteria using laboratory scale submerge microfiltration membrane bioreactor operated with batch experiment and sequencing batch reactor (SBR) at department of Environmental Engineering Kasetsart university.

The results showed that kinetic coefficients of dairy wastewater degradation by photosynthetic bacteria was determined as maximum rate of substrate utilization per unit weight of microorganism (k) = 5.19 mg-COD/mg-MLVSS/d, half velocity coefficient (K_s) = 116 mg-COD/l, Yield coefficient (Y) = 0.14 mg-MLVSS/mg-COD, microorganism decay coefficient (k_d) = 0.017 mg-MLVSS/mg-MLVSS/day and maximum specific growth rate (μ_m) = 0.73 mg-MLVSS/mg-MLVSS/day. Removal efficiency of submerge membrane bioreactor using photosynthetic bacteria was dependent on F/M and contrary with SRT. The COD removal efficiency was 97% with F/M 0.05 kg-BOD/kg-MLVSS/d, organic loading 0.09 kg-BOD/day and HRT 1 days. Constant fluxes base on concentration of MLSS at constant trans membrane pressure (TMP) was -15 kPa. At Concentration of MLSS were 500, 800, 1200 and 2500 mg/l led to constant fluxes were 5.43, 4.40, 4.01 and 2.72 L/hr/m² respectively.

Jutamas Kaewsuk
Student's signature

Monthon Thanuttamawong 22 / 09 / 49
Thesis Advisor's signature