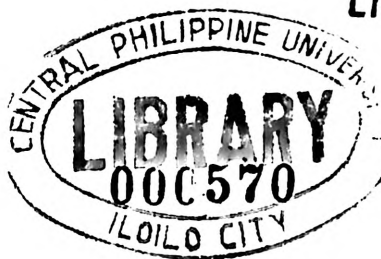


**MICROBIAL GROWTH KINETICS OF RECONDITIONED FREEZE-DRIED
BIOMASS**

**A Special Problem Presented to the
Faculty of the School of Graduate Studies
Central Philippine University**

**In Partial Fulfillment of the
Requirements for the Degree
Master of Engineering**

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**MA. JUNALLIE E. FUENTEBELLA
Oct. 2004**

MICROBIAL GROWTH KINETICS OF RECONDITIONED FREEZE-DRIED BIOMASS

by

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ABSTRACT

The discovery of the use of microorganisms for the synthesis of organic compounds has paved the way for the utilization of microbial processes in treating industrial and municipal wastes. The design and operation of biological reactors that would facilitate these processes require the knowledge of the reaction kinetics representative of the microbial metabolisms in the particular biological system being studied.

This study established a mathematical model for the microbial growth kinetics of reconditioned freeze-dried biomass. Wastewater from an alcohol distillery served as the substrate. From this, four (4) substrate concentrations, 5 ml, 20 ml, 15 ml and 25 ml were used in the study. The maximum growth rate (μ_{\max}), substrate affinity constant, (K_s) and first-order death-rate constant, k_d , were the kinetic parameters determined using Monod's Model. On the assumption of balanced growth, the stoichiometric parameter, growth yield was also determined.