

Journal of Chemical, Biological and Physical Sciences



An International Peer Review E-3 Journal of Sciences

Available online at www.jcbpsc.org

Section B: Environmental Biotechnology

CODEN (USA): JCBPAT

Abstract

Analysis of Anaerobic Digestion Process from Cow Manure with and Without Temperature Control and Time Differences on Manure Storage

Lucia Cabrera-Baez*, Lilia Tapia-López, Myrna Solís-Oba, Erik Ocaranza-Sánchez

Centro de Investigación en Biotecnología Aplicada Tlaxcala, Instituto Politécnico Nacional

Abstract: Anaerobic digestion involves degradation of organic materials such as animal manure, and it is generated a product known as biogas, whose main components are carbon dioxide and methane (if methane content is >40% the biogas is flammable). Methane production depends of the anaerobic digestion process conditions. In this study we analyze the effect of the process temperature and the manure storage time, for the anaerobic digestion process and their implications over the biogas yield and its content of methane. Anaerobic digestion experiments were developed at a controlled temperature of 30°C±2 and at greenhouse conditions, without temperature control. In order to evaluate the manure storage time effect the reactors were feed with fresh and non-fresh cow manure. Experiments were replicate during three year seasons. We found that at 30°C and using fresh manure during the anaerobic digestion was produce biogas with at least 50% methane content, on the other hand there was not important methane quantity in biogas when non-fresh manure was feed. At greenhouse conditions and with fresh manure biogas has lower than 40% methane content and only 11% methane with the use of non-fresh manure. Biogas production and methane content was enhanced using fresh manure for the anaerobic digestion and at controlled temperature conditions (30°C).

Keywords: Anaerobic Digestion, Biogas, Cow Manure, Methane.

Corresponding author: Lucia Cabrera-Baez
lcabrerab1201@alumno.ipn.mx