International Journal of ChemTechResearch
CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.11 No.05,pp22-31,2018

Aerobic and Anaerobic Biodigestion Assessment in the Production of Compost, Biol and Biogas from Restaurant Waste with Cattle Manure as Inoculum

Angel Villabona-Ortíz[1], Candelaria Tejada-Tovar*[2], Andrés Pernett-Gómez[3], Diofanor Acevedo[4]*, Ronald Tejada-Tovar[5]

[#]Faculty of Engineering, Chemical Engineering program, Research Group IDAB, University of Cartagena Av. El Consulado, 130015, St. 30 No. 48-152. Cartagena de Indias, D. T. y C.
[4]Research Group Nutrición, Salud y Calidad Alimentaria (NUSCA), Universidad de Cartagena, Campus of Piedra de Bolívar, 130015 Cartagena de Indias, D. T. y C., Colombia.

Abstract: The purpose of this research was to evaluate the production of compost, biol and biogas from organic solid waste using cattle manure as inoculum through aerobic and anaerobic biodigestion; two prototypes of biodigester were designed on a pilot scale. The monitored variables were pH and moisture in order to obtain good quality compost. Solid organic waste from a sample of restaurants in the city of Cartagena de Indias was used; cattle manure was also used for its production. The growth of mesophilic bacteria, fecal coliforms and fungi present in different stages of composting was monitored, using Brilla Broth and Mac Conkey and Brilla agar. The Most Probable Number method was used for counting microorganisms, and the successful collection of biological by-products and biogas was performed. The obtaining and quality of the compost from the experiments depended substantially on the use of inoculum, as evidenced by the aerobic/anaerobic experiments with inoculum, from which a greater quantity of by-products was obtained and complied with the optimum ranges for the chemical, physical and microbiological parameters for organic fertilizers.
Keywords: Composting, C/N ratio, aerobic biodigester, anaerobic biodigesters, biol, biogas.

International Journal of ChemTechResearch, 2018,11(05): 22-31.

DOI= http://dx.doi.org/10.20902/IJCTR.2018.110503

*****