Use of Anaerobic Biodigestion to Produce Energy, Reduce the Amount of Waste Generated, and Eliminate the Emission of Greenhouse Gases in Agricultural Projects

Santana-Rivera, Mirelys (School: Centro Residencial de Oportunidades Educativas de Ceiba)

Environmental pollution has been an issue of great importance and concern for many countries. Livestock is an agricultural activity that contributes significantly to greenhouse gas emissions. This problem leads to the question, Will it be effective to create an anaerobic biodigestion system to use biogas as an energy source, eliminate objectionable odors and reduce the emission of greenhouse gases into the atmosphere? The purpose of the experiment was to design an anaerobic biodigester, which can produce energy using waste generated in agricultural projects. The average accumulated biogas production was 4.23L for ten days, 13.78L for twenty days and 25.58L for thirty days. Greenhouse gas emissions into the atmosphere were controlled. Being a totally sealed system. The objectionable odors that are considered one of the main problems of livestock agricultural projects, were controlled. The biogas produced can be contained and used as an energy source. The potential to generate its own energy makes the proposal of these systems attractive since the energy cost continues to increase. The material obtained at the end of the process is less polluting and with better fertilizing properties. The goal was achieved by producing biogas, eliminating greenhouse gas pollution, and reducing objectionable odors. One of the most significant projections of the project would be to measure the purity of the biogas to determine the exact amount of methane produced. The benefits obtained with an anaerobic biodigestion system are positive for both, the farmer, and the environment.

Awards Won:
U.S. Agency for International Development: USAID Science for Development First Award - Agriculture and Food Security