World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:17, No:11, 2023

Effect of Aeration on Co-Composting of Mixture of Food Waste with Sawdust and Sewage Sludge from Nicosia Waste Water Treatment Plant

Authors : Azad Khalid, Ime Akanyeti

Abstract : About 68% of the urban solid waste generated in Turkish Republic of Northern Cyprus TRNC is household solid waste, at present, its disposal in landfills. In other hand more than 3000 ton per year of sewage sludge produces in Nicosia waste water treatment plant, the produced sludge piled up without any processing. Co-composting of organic fraction of municipal solid waste and sewage sludge is diverting of municipal solid waste from landfills and best disposal of wastewater sewage sludge. Three 10 L insulated bioreactor R1, R2 and R3 obtained with aeration rate 0.05 m3/h.kg for R2 and R3, R1 was without aeration. The mixture was destined with ratio of sewage sludge: food waste: sawdust; 1:5:0.8 (w/w). The effective of aeration monitored during 42 days of process through investigation in key parameter moisture, C/N ratio, temperature and pH. Results show that the high moisture content cause problem and around 60% recommend, C/N ratio decreased about 17% in aerated reactors and 10% in without aeration and mixture volume reduced in volume 40% in final compost with size of 1.00 to 20.0 mm. temperature in reactors with aeration reached thermophilic phase above 50 °C and <40 °C in without aeration. The final pH is 6.1 in R1, 8.23 in R2 and 8.1 in R3.

Keywords : aeration, sewage sludge, food waste, sawdust, composting
Conference Title : ICWM 2023 : International Conference on Waste Management
Conference Location : Paris, France
Conference Dates : November 27-28, 2023