

Anaerobic Co-Digestion of Pressmud with Bagasse and Animal Waste for Biogas Production Potential

Authors : Samita Sondhi, Sachin Kumar, Chirag Chopra

Abstract : The increase in population has resulted in an excessive feedstock production, which has in return lead to the accumulation of a large amount of waste from different resources as crop residues, industrial waste and solid municipal waste. This situation has raised the problem of waste disposal in present days. A parallel problem of depletion of natural fossil fuel resources has led to the formation of alternative sources of energy from the waste of different industries to concurrently resolve the two issues. The biogas is a carbon neutral fuel which has applications in transportation, heating and power generation. India is a nation that has an agriculture-based economy and agro-residues are a significant source of organic waste. Taking into account, the second largest agro-based industry that is sugarcane industry producing a high quantity of sugar and sugarcane waste byproducts such as Bagasse, Press Mud, Vinasse and Wastewater. Currently, there are not such efficient disposal methods adopted at large scales. According to manageability objectives, anaerobic digestion can be considered as a method to treat organic wastes. Press mud is lignocellulosic biomass and cannot be accumulated for Mono digestion because of its complexity. Prior investigations indicated that it has a potential for production of biogas. But because of its biological and elemental complexity, Mono-digestion was not successful. Due to the imbalance in the C/N ratio and presence of wax in it can be utilized with any other fibrous material hence will be digested properly under suitable conditions. In the first batch of Mono-digestion of Pressmud biogas production was low. Now, co-digestion of Pressmud with Bagasse which has desired C/N ratio will be performed to optimize the ratio for maximum biogas from Press mud. In addition, with respect to supportability, the main considerations are the monetary estimation of item result and ecological concerns. The work is designed in such a way that the waste from the sugar industry will be digested for maximum biogas generation and digestive after digestion will be characterized for its use as a bio-fertilizer for soil conditioning. Due to effectiveness demonstrated by studied setups of Mono-digestion and Co-digestion, this approach can be considered as a viable alternative for lignocellulosic waste disposal and in agricultural applications. Biogas produced from the Pressmud either can be used for Powerhouses or transportation. In addition, the work initiated towards the development of waste disposal for energy production will demonstrate balanced economy sustainability of the process development.

Keywords : anaerobic digestion, carbon neutral fuel, press mud, lignocellulosic biomass

Conference Title : ICADB 2019 : International Conference on Anaerobic Digestion and Biogas

Conference Location : Berlin, Germany

Conference Dates : July 22-23, 2019