



*“Gheorghe Asachi” Technical University of Iasi, Romania*



---

## BIOMETHANATION OF PINEAPPLE WASTES USING POTENT ANAEROBIC CONSORTIA SUBSTITUTING COW MANURE

**Mukesh Kumar, Samuel Jacob B, Lakshmeshri Upadrasta, Rintu Banerjee\***

*Indian Institute of Technology Kharagpur, Agricultural and Food Engineering Department, India*

---

### Abstract

The present study deals with the production of biogas from post-harvest wastes of pineapple such as peels, leaves, mixture of peels and leaves with the two different types of inoculum viz., Cow Manure (CM) and Novel microbial Consortia (NC). The results between the two types of inoculum were compared to find out their efficiency. Among the different substrate-inoculum combinations, the biogas production potential was evaluated which resulted that NC was more efficient compared to CM. All assays were conducted till cessation of biogas production which completed on 80<sup>th</sup> day. Pineapple leaves with NC proven to be best substrate-inoculum combination with maximum biogas yield of 208.28 L/kg Total Solid (TS) comprising of 72.45% methane, whereas same substrate with CM yielded 35.96 L/kg TS with 34.7% methane. Co-digestion mixture of peels and leaves yielded 187.19 l /kg TS with 56.61% methane with NC which was 2.2 fold higher when compared with CM having a yield of 84.46 L/kg TS and 49.2% methane. In all these assays total biogas yield with NC have been significantly improved than CM inoculum. In addition, high percentage of Volatile Solid (VS) destruction (44.72-61.4%) and methane yield between 48.8-72.45% were observed with NC. These results have substantiated the better efficiency of NC for anaerobic digestion of pineapple wastes which can replace cow manure for large scale commercialization.

*Keywords:* biogas, cow manure, methane, novel microbial consortia, pineapple wastes

*Received: April 2013; Revised final: February, 2014; Accepted: February, 2014*

---