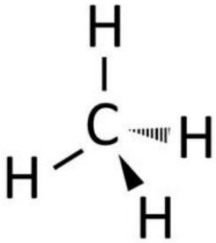
universität innsbruck
Department of Microbiology

Temp4AD

Firing up anaerobic digestion – Effect of Temperature on Biogas Production During Anaerobic Digestion

Research group: *Microbial Resource Management*

Lead: *Priv.Doz.Dr. Sabine Podmirseg*



1. **Introduction:**

   Rising global energy demand and reliance on fossil fuels drive the need for renewable alternatives like bioenergy. Anaerobic digestion of organic waste offers a sustainable solution for producing biogas while reducing environmental impacts. Temperature strongly influences microbial activity and methane yield, yet the intermediate range between mesophilic and thermophilic conditions (40–50°C) remains underexplored. This study investigates anaerobic digestion performance across 34–61°C to identify optimal conditions for biogas production.

2. **Objectives:**

   This experiment aims to assess the effects of temperature on 120 fed-batch lab-scale anaerobic digesters incubated at temperatures from 34°C to 61°C at high resolution and using three different inoculants. This will allow us to identify their individual optimal temperatures and to study whether the temperature effects change due to the applied inoculum.

3. **What you will do:**

   - Implement 120 small bioreactors
   - Continuously track gas production and composition
   - Monitor physico-chemical parameters of the reactors during the experiment.
   - Perform hygienisation assays by plating and cultivating microbes on selective agar plates
   - Quantify microbial groups of interest performing dPCR

4. **Requirements:**

   - ✓ Basic knowledge about microbiology and molecular biology techniques.
   - ✓ Previous experience in microbiology lab courses is of advantage.
   - ✓ Proficiency in English

5. **Other information:**

   Starting date: 15th January 2025
   If interested, get in touch with Dr. Sabine Podmirseg, sabine.podmirseg@uibk.ac.at