

Session 4: Biogas Processes I

Semi-continuous fermentation of kitchen waste

Manfred GREGER^{1*}, Markus SCHLIENZ¹, Simon WEBER¹, Véronique WELZ¹

¹ Faculty of Sciences, Technology and Communication, University of Luxembourg, Luxembourg

The use of kitchen and food waste of which a great amount is disposed every year in EU is an interesting path for energetic utilisation as well as an alternative substrate in anaerobic digestion. Compared to other substrates e.g. energy crops or manure, kitchen waste includes a higher content of proteins and fats which turn out in higher biogas and methane yield than substrates mainly based on carbohydrates.

To exclude problems related to hygienisation, a model kitchen waste (59% VS carbohydrates, 16% VS proteins and 25% VS fats) was used for fermentation experiments at mesophilic condition. Semi-continuous experiments in a continuously stirred 6 litres reactor (CSTR) with daily feeding shows good degradation for loadings of 1 and 2 gVS/l/d, but reduced degradation performance at 4 gVS/l/d. The experiments with model kitchen waste as unique substrate needs additional input of micro- and macro elements as well as buffering capacity. Therefore it would be quite interesting to use kitchen waste as co-substrate.