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University of Veterinary Medicine
Research Institute of Veterinary Medicine
Hlinkova 1/A
040 01 Košice
Slovak Republic

BIOGAS PRODUCTION FROM ANIMAL WASTES, ENERGY PLANTS AND ORGANIC WASTES

AMON THOMAS*, JEREMIC DRAGOMIR, HACKL EVELYN, AMON BARBARA, BOXBERGER JOSEF

*corresponding author:

*Institute of Agricultural, Environmental and Energy Engineering (ILUET)
University of Agricultural Sciences, Nussdorfer Laende 29 - 31, A-1190 Vienna, Austria
email: amon@mail.boku.ac.at
Phone: (43 1) 318 98 77 92, Fax: (43 1) 318 98 77 27*

Proposed as oral presentation

Topics: Strategies for organic waste management in agriculture, processing and handling of wastes, environmental impacts

INTRODUCTION

Agricultural biogas production offers several environmental benefits including the production of renewable energy. Co-digestion of energy crops, organic wastes and agricultural manures increases the biogas yield and offers an environmentally friendly alternative to landfilling of organic wastes. In the EU, 1,545 Mio t of animal wastes and energy crops could be anaerobically digested. This would reduce CO₂ emissions by 211 Mio t CO₂-eq. per year. Co-digestion of animal wastes and energy crops must aim at a high methane yield and a stable and safe operation of the biogas plants. Methane yield is strongly dependent both on composition of input substrates and on biogas plant management.

ILUET carries out research on co-digestion of animal manures, energy crops and organic wastes both on lab scale and on commercial farms. The presentation will give detailed insight into ILUET's recent research.

TECHNOLOGY OF BIOGAS PRODUCTION

ILUET recently planned two commercial biogas plants that digest 20000 t of animal manures, 7000 t of energy crops and 3000 t of organic wastes. The presentation will give details on technology of the biogas plants and on the expected economic efficiency.

ENERGY PRODUCTION

Biogas production from energy crops is intensively investigated on lab scale. Influence of crop variety, time of harvesting, fermentation temperature and hydraulic retention time on methane yield are followed. The presentation will give results of recent measurements including digestion of maize, cereals, clover and grass.

ECONOMIC EFFICIENCY

ILUET and the Institute for Agricultural Economics of the University of Agricultural Sciences, Vienna developed a computer programme for the calculation of the economic efficiency of biogas plants. The program takes into consideration all common substrates for biogas production, different designs of agricultural biogas plants, all the technical details and all costs of the biogas plant. Three main influences on the economic efficiency of agricultural biogas plants can be identified. The presentation will give figures on economic efficiency.