

BIOMASS COFERMENTATION FOR BIOGAS PRODUCTION IN AGRO ECOLOGICAL CONDITIONS IN LATVIA

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More than 20 biogas plants have started working recently in Latvia. There is a need to investigate the suitability of various biomasses for energy production. This paper shows the results of cofermentation of waste water sludge with milk processing whey and different plant biomass. The cofermentation process was investigated for biogas production in 50 l digesters, operated in continuous mode at temperature $38 \pm 1.0^\circ\text{C}$. Average methane yield per unit of volatile solids added (VS) from cofermentation with sunflower silage was $247 \text{ l} \cdot \text{kg}_{\text{VSa}}^{-1}$ and average methane (CH_4) content was 59.39%. Average methane yield from cofermentation with yellow leaves of trees was $260.83 \text{ l} \cdot \text{kg}_{\text{VSa}}^{-1}$ and average methane content was 64.17%. All investigated wastes and plants have good biogas yields, and can be successfully cultivated for energy production under agro ecological conditions in Latvia.

Latvia cannot provide the country with own produced energy and fossil energy resources are imported from other countries. There are 368500 ha of not used agriculture land in Latvia. Effective use of this land could help to obtain a significant amount of energy. One of the most advanced methods of energy production from biomass is anaerobic digestion. The biogas is a product of great value and its production technology does not increase the carbon dioxide emission and is environmentally friendly. In recent years the biogas production is booming also in Latvia. There is a need to use different raw materials in biogas plants. The investigation results of cofermentation of these materials are very important for the maintaining a stable anaerobic digestion process at any plant.