

Improving methane production from digested manure biofibers by mechanical and thermal alkaline pretreatment - DTU Orbit (09/11/2017)

Improving methane production from digested manure biofibers by mechanical and thermal alkaline pretreatment

Animal manure digestion is associated with limited methane production, due to the high content in fibers, which are hardly degradable lignocellulosic compounds. In this study, different mechanical and thermal alkaline pretreatment methods were applied to partially degradable fibers, separated from the effluent stream of biogas reactors. Batch and continuous experiments were conducted to evaluate the efficiency of these pretreatments. In batch experiments, the mechanical pretreatment improved the degradability up to 45%. Even higher efficiency was shown by applying thermal alkaline pretreatments, enhancing fibers degradability by more than 4-fold. In continuous experiments, the thermal alkaline pretreatment, using 6% NaOH at 55 °C was proven to be the most efficient pretreatment method as the methane production was increased by 26%. The findings demonstrated that the methane production of the biogas plants can be increased by further exploiting the fraction of the digested manure fibers which are discarded in the post-storage tank.

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