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Aerobic deterioration of corn stalk silage and its effect on methane production and microbial community dynamics in anaerobic digestion

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microbial community dynamics in anaerobic digestion

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Abstract

Ensilage is a commonly used method of preserving energy crops for biogas production. However, aerobic deterioration of silage is an inevitable problem. This study investigated the effect of aerobic deterioration on methane production and microbial community dynamics through anaerobic digestion (AD) of maize stalk silage, following 9 days air exposure of silage. After air exposure, hydrolytic activity and methanogenic archaea amount in AD were reduced, decreasing the specific methane yield (SMY); whereas lignocellulose decomposition during exposure improved the degradability of silage in AD and enhanced SMY, partially compensating the dry matter (DM) loss. 29.3% of the DM and 40.7% of methane yield were lost following 0-9 days exposure. Metagenomic analysis

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