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Effect of glucose and cellulase addition on wet-storage of excessively wilted maize stover and biogas production

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Abstract

In north China, large amounts of excessively wilted maize stover are produced annually. Maize stover wet storage strategies and subsequent biogas production was examined in this study. Firstly, wet storage performances of harvested maize stover, air-dried for different time durations, were evaluated. Results showed that optimal storage performance was obtained when the initial water soluble carbohydrate (WSC) content after air-drying was higher than 8.0 %. Therefore, cellulase and glucose were added to the excessively wilted maize stover to achieve the targeted pre-storage WSC levels. Good storage performances were observed in treatments with addition of 76.4g/kg DM glucose and 12.5g/kg DM of cellulase; the specific methane yield increased by 23.7 % and 19.2 %, respectively. However, use of glucose as additive or co-storing with high WSC substrates can serve as economically feasible options to adapt wet storage of excessively wilted maize stover.

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