ACS   Publications   C&EN   CAS   MEMBERSHIP

sciMeetings
A PRODUCT FROM
ACS Publications

☰

How does pelleting alter the enzymatic digestibility of corn stover?

Xueli Chen ✉, Diana Milena Gutierrez, Michael Ladisch, Nathan Mosier

ACS Spring 2023   👁 1   ⭐ 0 Favorites   0 Citations   ⬇ **0 Downloads**

Abstract

Pelleting of lignocellulosic biomass facilitates its transportation, storage and handling and offers opportunities to improve the enzymatic digestibility of pelleted biomass. Here, we report the impact of pelleting on the enzymatic digestibility of corn stover prior to pretreatment and associated substrate characteristics. Pelleting almost doubles the digestibility of unpretreated corn stover, from 8.2 to 15.5% glucan conversion, at 5% solid loading using 1 FPU Cellic CTec2 per g solids. Compositional analysis indicates that loose and pelleted corn stover have similar non-dissolvable compositions, although their extractives are slightly different. Enzymatic hydrolysis of washed corn stover after size reduction to normalize particle sizes and removal of extractives confirms that pelleting improves corn stover digestibility. Such differences may be explained by the decreased particle size, increased specific surface area, improved cellulose accessibility, and reduction of the polymer length of cellulose induced by pelleting. These findings help to design processing schemes for sustainable and efficient use of lignocellulose.

Show Less

Your Poster

Digitally Preserved. Citable. With a DOI.

With ACS SciMeetings, you can download and view posters and presentations, submit your own work, gain global exposure, share on social media, and expand your network.

Learn More