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COMPARISON OF DIFFERENT MECHANICAL REFINING TECHNOLOGIES ON THE ENZYMATIC DIGESTIBILITY OF LOW SEVERITY ACID PRETREATED CORN STOVER

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Abstract

The effect of mechanical refining on the enzymatic digestibility of pretreated corn stover (PCS) was investigated. Low severity, dilute sulfuric acid PCS was subjected to mechanical refining using a bench-scale food processor blender, a PFI mill, a 12-inch laboratory disk refiner, and a 25 mm co-rotating twin-screw extruder. Glucose yields from enzymatic hydrolysis were improved by 10-15% after blending and disk refining, while PFI refining and twin-screw extrusion showed a glucose yield improvement of 16-20%. A pilot scale refining test using a Szego mill was performed and showed approximately 10% improvements in biomass digestibility. This suggests the possibility to scale up a mechanical refining technique to obtain

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