

Dilute Acid Pretreatment and Elevated-Temperature Washing of Corn Stover and Poplar

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The use of an elevated-temperature washing of pretreatment biomass immediately following dilute sulfuric acid pretreatment prior to cooling to temperatures required for mesophilic enzymatic hydrolysis has been shown to offer potential for reducing the cost of producing sugars from biomass. Possible cost-reduction opportunities include lowering the required pretreatment severity, lowering the required amounts of protein necessary for subsequent enzymatic hydrolysis, and/or increasing the overall yields of fermentable sugars from biomass.

This background knowledge is being applied within the DOE-funded Biomass Refining Consortium for Applied Fundamentals and Innovation (CAFI) project entitled "Integration of Leading Biomass Pretreatment Technologies with Enzymatic Digestion and Hydrolyzate Fermentation" as one of several pretreatment approaches being investigated in a comparative manner. Relevant pretreatment and elevated temperature washing data using corn stover and poplar feedstocks at bench and pilot-scale has been generated. Data that will be discussed includes pretreatment sugar yields, washing efficiency for removal of components solubilized during pretreatment, such as sugars and solubilized lignin, and the resulting impact of wash liquid volume and chemistry on the composition of the pretreatment, washed biomass and on enzymatic hydrolysis performance.