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BioCentury Research Farm

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Biomass Supply Chain Management

The biomass supply chain management program focuses on sustainable and efficient methods of corn stover production for cellulosic biofuels. Researchers explore a range of topics including advanced harvesting machinery development, storage and quality preservation techniques for biomass feedstocks, machinery fleet management optimization and incorporation of biomass harvesting into a sustainable crop management plan. The BioCentury Research Farm provides the team a wide range of research tools including the high-capacity biomass analysis lab, data analytics tools, industrial-quality storage-testing facilities and instrumented machinery for analyzing biomass production operations. An integrated extension and outreach program supports the direct transfer of research results to the public and has served a critical role in increasing the knowledge of Iowans involved in the bioeconomy. The outcomes of this program have been enhanced by the strong public-private partnerships developed with Iowa companies.

Accomplishments

» Biomass machinery development research has led to a 35 percent reduction in ash content in corn stover feedstock.

» Biomass machinery fleet management solutions have reduced the cost of corn stover production by 40 percent compared to initial benchmarks.

» Biomass storage research has developed best management practices to maximize the long-term quality of biomass to ensure year-round cellulosic biorefinery operation.

» Twenty-three extension publications were developed to educate the public and the biomass supply chain industry on best practices for sustainable and efficient corn stover production. www.extension.iastate.edu/stover

Future Work

» Integration of strip-till management with corn stover harvesting for sustainable biomass production.

» Just-in-time delivery scheduling for consistent feedstock supply and quality to a cellulosic biorefinery.

Team Members

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