



Biomass Program

Feedstock Sugar Interface

To access enough biomass to meet petroleum displacement goals, a variety of feedstock and delivery systems are needed. Selection of the feedstock and delivery system for a biorefinery is important because it can affect the physical and chemical properties of the biomass input. These physical and chemical properties, or quality factors, directly impact material handling as well as the efficiency of pretreatment, hydrolysis, and conversion to products. A better understanding of the interactions between feedstock harvesting systems, preprocessing, and changes in storage (wet, dry), coupled with industrial pretreatment, hydrolysis, and biochemical conversion processes will enable overall optimization of the feedstock-to-product pathway. This project will establish the value of and requirements for delivery of biomass feedstocks to the biorefinery.

R&D Pathway

The research focuses on three areas: 1) identification of feedstock assembly processes and delivery requirements; 2) assessment of combinations of biomass resources with assembly options for coupling with near-term biorefinery pathways; and

3) selection of the best near-term and long-term feedstock assembly options based on feedstock and platform technology trade-offs. The feedstocks under investigation include corn stover, switchgrass, and cereal straws.

Sustainable removal rates, which dovetail into selective harvest operations, as well as preprocessing and wet storage systems, will be tested to determine their impacts on biorefinery-specific operations. The industrial-scale costs of achieving various quality upgrades will be estimated, as well as the cost impacts of quality downgrades.



Corn stover delivered and compacted for bunker ensiling.

Biochemical R&D

Benefits

- Define the feedstock quality requirements necessary for efficient conversion to value-added products

Applications

This research will augment the deployment of lignocellulosic sugar biorefineries by greatly increasing the accessible biomass tonnage.

Project Participants

Idaho National Laboratory

Project Period

FY 2006 – FY 2015

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