



Biomass Program

Feedstock Interface R&D

Harvesting and Collection of Biomass

A reliable infrastructure capable of supplying large quantities of feedstock is needed to support a new bioindustry where fuels and chemicals are produced from renewable biomass rather than petroleum. Existing harvest and collection methods, in most cases, will not be sufficient to supply the high volume of biomass that will be required for biorefineries.

Cost-effective harvesting and collection of biomass is critical to the future feedstock infrastructure. Current multiple-pass harvesting technologies are costly, lead to significant amounts of soil compaction, and introduce dirt and rocks into the feedstock.

To overcome these limitations, researchers are developing a single-pass, multi-component harvesting technology that will simultaneously and selectively harvest grain and the desired plant components in a single pass. The technology will reduce soil compaction and harvest the optimum parts of the plant, while

leaving behind components that aid in soil management.

Sustainable harvesting is a key challenge. Researchers, as part of this project, will examine various harvesting technologies and methods that will help to meet goals for sustainability and availability of the biomass feedstock. This includes determining what plant components are best suited for feedstock, and which should be left in the field for soil health and sustainability.

R&D Pathway

In the first phase of the project, researchers will test the engineering and biomechanics of mechanical or physical fractionation of corn stover and cereal straw samples. Predictive models will then be developed to enable the design of a multi-component harvesting system.

Process integration, biomass formatting and handling, and machine control will be investigated to combine the harvest of grain and biomass into a single pass.

Benefits

- Sustainable methods for harvesting high quality, low cost biomass feedstocks
- Selective harvesting of desirable crop components

Applications

The harvesting technology will be applicable to corn stover, cereal straw, and other biomass feedstocks.

Project Participants

Idaho National Engineering and Environmental Laboratory
 Oak Ridge National Laboratory

Project Period

FY 2003 – FY 2005

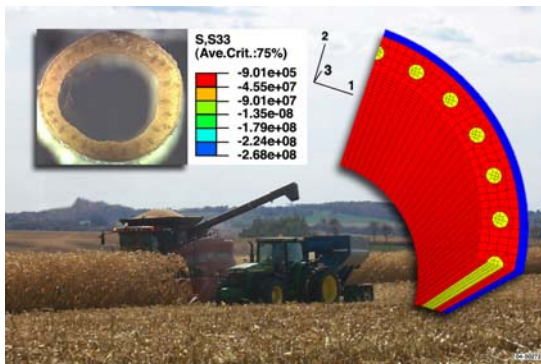
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Visit the Web site for the Office of the Biomass Program (OBP) at
www.eere.energy.gov/biomass.html

September 2004



Biomechanical modeling of a harvested biomass stem.