



Biomass Program

Feedstock Interface R&D

Selective Harvest of Wheat Straw

Agricultural crop residues such as wheat straw are a valuable renewable biomass resource. Silica, alkali minerals, and other undesirable characteristics of these crop residues make certain parts of the straw more or less valuable as bioenergy feedstocks. The use of wheat straw for producing materials, fuels, and chemicals has been limited in part by the cost of pretreating straw biomass to make it a suitable feedstock for bioenergy conversion.

For cost-effective utilization of the straw, the undesirable components must be removed and the desirable components selectively harvested. Researchers on this project are developing a distributed low-capital, low-labor system to separate out the undesirable parts

of the straw residue so they can be left on the field to build organic matter and to help maintain soil nutrient levels.

Researchers will also focus on developing a biological process for upgrading wheat straw while in storage to a more desirable feedstock for useful products and materials.

R&D Pathway

The initial emphasis of the project will be on creating a preliminary full-scale design for new or modified equipment to harvest, handle, and store straw stems. In addition, researchers will develop an “in storage” biological pretreatment methodology to upgrade wheat straw, and complete feedstock testing for end-uses such as combustion, gasification and straw-thermoplastic composites.



Benefits

- Enable the use of wheat straw for energy, fuels and biomaterials production
- Develop efficient biomass pretreatment systems that can be integrated into normal farming operations with minimum impact to those operations

Applications

This project will identify and evaluate low-cost methods for removing undesirable components from wheat straw, and develop an “in storage” biological pretreatment process to upgrade wheat straw for bioenergy conversion processes.

Project Participants

Idaho National Engineering and
Environmental Laboratory
EPI
State of Idaho
University of Idaho
Washington State University

Project Period

FY 2000 – FY 2004

For more information contact:

Jim Spaeth
DOE Golden Field Office
Jim.Spaeth@go.doe.gov

EERE Information Center
1-877-EERE-INF (1-877-337-3463)

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