



Sustainable Stover Harvest Strategies

What is this technology?

A determination of how much corn stover can be harvested without degrading soil, water, or air quality; what quality the stover has for bioenergy production; and what costs and benefits will be incurred.

A partnership among ARS, Iowa State University, and Idaho National Laboratory scientists

- ARS focuses on the sustainability of harvesting crop residues – impact on soil-water-air quality.
- ISU focuses on equipment development – design of a one-pass harvesting system for grain and stover.
- INL focuses on feedstock quality for bioenergy production.

An example of studies in the ARS Renewable Energy Assessment Project (REAP)

- REAP is a multi-location effort with similar goals currently operating in 15 locations across the U.S.
- REAP provides a link to industry and university partners including the SunGrant Regional Project.
- REAP members are determining the partitioning of nutrients, sugar and fiber in harvested corn stover as a function of cut height for various locations across the nation.

What has been accomplished?

- Harvesting the cob and stover from the upper 50% of the corn plant can provide a high-quality bio-energy feedstock and some soil residue cover at a reasonable harvest speed.
- Harvesting the whole plant or lower stalk portion increases pre-treatment cost, nutrient replacement cost, and results in very little soil cover.
- Before crop residues are removed, producers should be sure their soil-test nutrient levels are not limiting.

What are the benefits of partnering with the ARS on this research?

- ARS provides the bridge between bioenergy production, soil-water-air quality, food-feed-fiber production, economics, and other aspects of the entire agricultural system.
- This partnership allows each group to focus on their specialty and together address the complex system.

Who are the primary beneficiaries of this research?

Farmers, the biomass-to-energy industry, and consumers will all benefit from developing sustainable strategies for harvest of corn stover for bioenergy and other bioproducts.

Moving Forward

- A cellulosic ethanol producer invited and funded our team to conduct similar field research on one of their sites in Iowa.
- Another new study will focus on the economic implications associated with this research.
- Water quality and greenhouse gas impacts of stover removal will be examined starting in 2009.

Contact Information

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