

EFFECTS OF REMOVING CORN STOVER FROM NO-TILL FIELDS ON SOIL QUALITY

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The benefits of no-till corn production to drastically reduce runoff and erosion from hill lands have been demonstrated and the results have been incorporated into practices recommended by the Natural Resources Conservation Service for farmers in national conservation programs.

A key component contributing to the success of the no-till practice is crop residues left on the ground surface. They contribute to soil-carbon levels, provide raindrop protection, and provide an environment for macrofauna (e.g., worms) that create large soil pores. The combined effects of these factors results in increased soil water-holding capacity, increased infiltration, and reduced runoff volumes and erosion. Consequently, the no-till conservation practice has significant benefits for runoff and water quality.

Harvest of crop residues from farm fields is often cited as a feedstock for biofuel production. However, the potential loss of environmental benefits (e.g., improved water quality) due the removal of the residues have not been widely studied. While the NRCS offers payments to producers for implementing the no-till practice to improve water quality, removing the surface residues can negate the environmental benefits of no till. The NAEW project addresses the sustainability of harvesting crop residues for biofuels production, considering the impacts of residue removal on runoff, and soil and water quality.

Studies speaking to environmental issues related to biofuels are important for legislators, agricultural producers, action agencies, and scientists, however, few such studies exist. The negative environmental consequences of drastic removal of crop residues for biofuels production are seldom discussed or known, but this knowledge is important for informed decision making from design of experiments to legislation.

The NAEW at Coshocton, Ohio is a unique 1050 acres facility, consisting of an infrastructure of gauged experimental watersheds with 70 years of runoff data under varying agricultural practices. A gauged no-till watershed, characterized by large soil-organic carbon and crop surface residues is available. Partnering with the NAEW on biofuels-related issues will enable the NAEW resource to be fully utilized to address environmental aspects of national energy concerns.

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