

Economics of Sequestering Carbon in the U.S. Agricultural Sector. By Jan Lewandrowski, Carol Jones, and Robert House, Resource Economics Division, Economic Research Service, U.S. Department of Agriculture; Mark Peters, Agricultural Marketing Service, U.S. Department of Agriculture; Mark Sperow, West Virginia University; and Marlen Eve and Keith Paustian, Natural Resource Ecology Laboratory and Colorado State University. Technical Bulletin No. 1909.

Abstract

Atmospheric concentrations of greenhouse gases can be reduced by withdrawing carbon from the atmosphere and sequestering it in soils and biomass. This report analyzes the performance of alternative incentive designs and payment levels if farmers were paid to adopt land uses and management practices that raise soil carbon levels. At payment levels below \$10 per metric ton for permanently sequestered carbon, analysis suggests landowners would find it more cost effective to adopt changes in rotations and tillage practices. At higher payment levels, afforestation dominates sequestration activities, mostly through conversion of pastureland. Across payment levels, the economic potential to sequester carbon is much lower than the technical potential reported in soil science studies. The most cost-effective payment design adjusts payment levels to account both for the length of time farmers are willing to commit to sequestration activities and for net sequestration. A 50-percent cost-share for cropland conversion to forestry or grasslands would increase sequestration at low carbon payment levels but not at high payment levels.

Keywords: Carbon sequestration, greenhouse gas mitigation, afforestation, conservation tillage, no-till, incentive design, leakage, carbon stock, and permanence.

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