

# Key Findings from the CEAP-Cropland Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Great Lakes Region

September 2011

***The voluntary, incentives-based conservation approach is achieving results.*** Farmers have made good progress in reducing sediment, nutrient, and pesticide losses from farm fields through conservation practice adoption throughout the Great Lakes region. Although only 17 percent of the cropland in the region is classified as highly erodible land, structural practices for controlling soil erosion are in place on 26 percent of all cropped acres in the region and on 37 percent of the highly erodible cropland. Eighty-two percent of the cropland acres meet criteria for no-till (32 percent) or mulch till (50 percent), and all but 9 percent have evidence of some kind of reduced tillage on at least one crop in the rotation.

**Adoption of conservation practices** has reduced wind erosion by 44 percent and edge-of-field waterborne losses of sediment by 47 percent, losses of nitrogen with surface runoff by 43 percent, losses of nitrogen in subsurface flows by 30 percent, and losses of phosphorus (sediment attached and soluble) by 39 percent. Reductions in pesticide losses from fields have reduced pesticide risk for people and aquatic ecosystems by 26 and 27 percent, respectively.

***Opportunities exist to further reduce sediment and nutrient losses from cropland.*** The assessment of conservation treatment needs presented in this study identifies opportunities to contribute to improved water quality in the Great Lakes Region. The study found that 19 percent of cropped acres (2.8 million acres) have a *high* level of need and that 34 percent (5 million acres) have a *moderate* level of need for additional conservation treatment. Acres with a high level of need consist of the most vulnerable acres with the least conservation treatment and the highest losses of sediment and nutrients.

Model simulations suggest that adoption of additional conservation practices on these high- and moderate-need acres would, compared to the 2003–06 baseline, further reduce edge-of-field losses of sediment by 64 percent, losses of nitrogen with surface runoff by 42 percent, losses of nitrogen in subsurface flows by 38 percent, and losses of phosphorus (sediment-attached and soluble) by 36 percent.

***Comprehensive conservation planning and implementation are essential.*** The resource concern with the most widespread need for additional conservation treatment related to cropland in the region is nitrogen loss in subsurface flows. The need for additional conservation practices to address excessive phosphorus loss (sediment adsorbed and soluble) from fields is also important but less so than for nitrogen—12 percent of cropped acres in the region have a **moderate** need for additional treatment to address excessive phosphorus loss.

***Targeting enhances effectiveness and efficiency.*** Targeting critical acres significantly improves the effectiveness of conservation practice implementation. Use of additional conservation practices on acres that have a high need for additional treatment—acres most prone to runoff or leaching and with low levels of conservation practice use—can reduce sediment and nutrient per-acre losses by about twice as much on average as treatment of acres with a moderate level of conservation treatment need.