

HOW SOIL EROSION IMPACTS FARM PRODUCTIVITY AND WHAT TO DO ABOUT IT

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Soil erosion continues to be a significant issue that affects farm productivity. Impacts of soil erosion on soil productivity are short- and long-term. Short-term, plant nutrient losses lower the fertility of the land, requiring additional fertilizer inputs to correct the decreased soil fertility. As soil erodes the depth of the soil profile is reduced, effectively decreasing the volume of soil crop roots have to explore for water and nutrients, which causes long-term productivity concerns. Both of these short- and long-term concerns are highlighted by the renewed interest in practices that promote soil health, such as reduced tillage, crop rotations, and cover crops. The Universal Soil Loss Equation (USLE), now the RUSLE2, can be used as a framework to explain the complexities of production fields, erosion and impacts of management practices. The USLE is defined as;

$$\text{Soil loss in tons per acre} = R \times K \times LS \times C \times P$$

where R is the erosivity of rainfall, K is the erodibility of the soil, L is slope length, S the slope pitch (angle), C is the cropping factor which includes crop rotation and tillage type, and P is other crop management practices. Of these six factors, we can mainly control the cropping factor (C) and the other management practices factor (P). Tillage practices and use of cover crops are two examples of management factors that affect crop productivity and erosion short- and long-term. This presentation will focus on short- and long-term impacts of erosion on crop yields and management options that can help reduce soil erosion and increase productivity in Wisconsin.

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