

# SOIL CONDITIONING INDEX



## WHAT IS A SOIL CONDITIONING INDEX?

Soil Conditioning Index (SCI) is a rating that can predict the consequences of cropping systems, tillage, nutrient application, and other associated practices on soil organic matter. Organic matter in soil is important since it improves soil structure, increases water infiltration, supplies nutrients to crops and other soil health qualities. The SCI score is based on three components that impact organic matter in soils. The components are evaluated with the Revised Universal Soil Loss Equation, Version 2 (RUSLE2), and the Wind Erosion Prediction System (WEPS) as the official tools used by the Natural Resources Conservation Service (NRCS).

## SCI RATING COMPONENTS

**Organic Material:** This component accounts for the effect of organic material returned to the soil. Organic material comes from plant or animal sources and may be either grown and retained on the site, or imported to the site. SCI positively increases when organic material is added and/or retained.

**Field Operations:** This component accounts for the effect of field operations which stimulate organic matter breakdown. Tillage, planting, fertilizer application, spraying and harvesting crush and shatter plant residue and aerate or compact the soil. These effects increase the rate of residue decomposition and affect the placement of organic material in the soil profile. SCI positively increases with reduced or no tillage and low disturbance manure incorporation (rather than high disturbance incorporation).

**Erosion:** This component accounts for the effect of removal and/or sorting of surface soil material by sheet, rill and/or wind erosion processes. The NRCS soil erosion prediction tools do NOT account for the effect of concentrated flow erosion such as ephemeral or classic gullies, but all types of erosion contribute to loss of organic matter and decline in long-term productivity. SCI positively increases when soil loss is predicted to be near zero tons per acre per year.

SCI scores range from -2 to +2. When the SCI rating is negative, the level of soil organic matter is predicted to decrease under the system and is generally not a sustainable cropping scenario. When the rating results in a positive number, the level of organic matter is predicted to increase under the system. Values near zero suggest the organic matter will be maintained near the current level.

## **WAYS TO IMPROVE THE SOIL CONDITIONING INDEX**

- Limit the number of tillage operations.
- Raise crops that produce high amounts of residue, retain that residue on the field.
- Utilize cover crops (keep the soil protected with living crops as much as possible).
- Limit the amount of soil disturbance each operation creates.
- Utilize manure, if incorporating use low-disturbance methods.
- Minimize the amount of wind and water erosion occurring on the field.
- Use production techniques that will increase crop and residue production.