



Natural Resources Conservation Service
United States Department of Agriculture

Soil Tillage Intensity Rating (STIR)



What is the STIR Value?

Soil Tillage Intensity Rating is a numerical value calculated using RUSLE2. It is based on factors determined by crop management decisions being implemented for a particular field. Lower numbers indicate less overall disturbance to the soil layer. By definition, No-Till operations require a STIR value of 10 or less. Values may range from 0 to 200 with a low score preferred.

What factors are part of the STIR value?

STIR Value reflects the kind of soil disturbance as well as the severity of the disturbance caused by tillage operations. Specific components of the STIR value include:

- Operational speed of tillage equipment
- Tillage type
- Depth of tillage operation
- Percent of the soil surface area disturbed

Why does STIR value matter to soil health?

Low STIR values reduce likelihood of sheet and rill and wind erosion. Other benefits of low STIR values include increasing Organic Matter (OM) content of the soil, less OM break down, lower carbon losses in soil, improved soil consolidation conditions, and greatly improved infiltration rates.

What can you do to lower your STIR Value?

Tillage operations greatly affect STIR values. Reducing tillage and choosing No-Till operations will greatly improve STIR ratings. Additional management decisions such as using soil conserving crops (alfalfa and grass) in the rotation will also lower STIR values.

All programs and services are offered on a nondiscriminatory basis.