

Name:

Soil tillage index

Definition:

This indicator refers to the grade of aggressiveness that machinery, used on the farm, provides to the soil. It refers to the number of passes, the implementation depth and the type of the used agricultural implement.

Calculation method:

The value of this indicator is estimated using the STIR (soil tillage intensity rating) proposed by the Natural Resources Conservation Service (USDA). The equation of RUSLE2 is used in its calculation. Lower values indicate less soil disturbance. By definition the direct seeding management has a STIR value below 15. The values range from 0 to 20.

$$\text{Indicator} = \sum S_i * STIR_i / S_T$$

S_i : Area of each plot expressed in hectares.

$STIR_i$: calculated value of STIR in each plot.

S_T : Total area considered (ha)

The value of the STIR reflects the class and severity of soil disturbance caused by tillage. It includes

- Speed of operation of the tilling equipment
- Type of tillage
- Depth of tillage
- Percentage of the affected soil area

Interpretation:

The application of best management practices to soil decreases the value of this indicator due to less tillage and its intensity.

Information source:

The data are obtained from the survey to the farmers through the operations carried out on the plots.

Bibliography and references:

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). Soil Tillage Intensity Rating (STIR).

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_014811.pdf