

**Soil Erosion Enhancement Activity – SOE01 - Continuous no-till with high residue**



**Enhancement Description**

Utilize continuous no-till/strip till/direct seed in the rotation in combination with high and low residue producing crops or cover crops to maintain a high level of residue cover through critical erosion periods.

**Land Use Applicability**

Cropland.

**Benefits**

High levels of surface residue with continuous no-till/strip till/direct seed reduce erosion by

wind and water by up to 90%. The result is increased soil organic matter compared to intensively tilled soils with no surface residue protection. This will in turn, enhance and protect water quality and biotic communities that depend on clean water.

**Criteria**

Implementation of this enhancement **requires** the use of continuous no-till/strip till/direct seed. The no-till/strip till/direct seed system must incorporate 1 or more of the following activities.

1. Maintain high level of residue cover after no-till planting all crops in the rotation.
  - a. Utilize high residue crops in the rotation
  - b. Maintain a minimum of 50% residue cover after no-till planting all crops.
2. Use high residue cover crops to provide adequate residue for no-till planting after or between low residue crops in rotation.
  - a. Utilize high and low residue crops in the rotation
  - b. Use no-till to plant high residue cover crops between two low residue annual crops
  - c. Maintain a minimum of 50% residue cover after no-till planting all crops.
3. Low disturbance no-till planting and moderate level of residue cover after or between low residue crops in rotation.
  - a. Utilize high and low residue crops in the rotation
  - b. After high residue crops, maintain a minimum of 50% residue cover after no-till planting
  - c. After low residue crops use low disturbance no-till planting; maintain a Soil Tillage Intensity Rating (STIR)  $\leq 20$  and a minimum of 30% residue cover after planting.



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In addition, each field must also have the soil loss at or below the tolerance (T) level for wind and/or water erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of 30 or less for each planted crop or cover crop in the rotation.

### **Documentation Requirements**

1. Crop rotation records including rotation length in years, crops and cover crops planted.
2. Sequence and description of operations for each crop and/or cover crop including harvest, residue conditioning, nutrient placement and planting/seeding.

## Indiana CSP Enhancement Supplemental Information

### SOE01- Continuous No-Till with High Residue:

#### Indiana Examples for meeting national criteria:

1. **Maintain high level of residue cover after no-till planting all crops in the rotation.**
  - a. A continuous No-till/Strip-till cropping system that meets IN-FOTG-329 with >50% of the crops in the rotation being high residue crops from the list below. Examples: Corn-Corn-Soybean, Corn-Wheat/Double crop Soybeans, or Corn- Soybean-Wheat
  
2. **Use high residue cover crops to provide adequate residue for no-till planting after or between low residue crops in rotation.**
  - a. A continuous No-till/Strip-till cropping system that meets IN-FOTG-329 with a cover crop seeded after low residue crops such as soybeans, tomatoes, corn silage, melons.  
Examples:
    - i. Corn-soybean w/ cover crop after soybean,
    - ii. Corn silage w/ cover crop- Soybean w/ Cover crop, Corn-Tomato w/ cover crop.
  
3. **Low disturbance no-till planting and moderate level of residue cover after or between low residue crops in rotation**
  - a. A continuous No-till/Strip-till cropping system that meets IN-FOTG-329 and/or the “modified no-till” criteria of IN-FOTG 345 Standard following a low residue crop that precedes a high residue crop.  
Examples:
    - i. Corn-Soybean rotation with both crops being no-tilled or strip-tilled,
    - ii. Corn-Soybean rotation with a rotary harrow being run once in the spring prior to planting corn and soybeans being no-tilled.

The **STIR** value is the **Soil Tillage Intensity Rating**. The RUSLE 2 software program utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation.

## Indiana CSP Enhancement Supplemental Information

### Residue Cover Types

Perennial Cover <u>1/</u>	High Residue Producing Crops <u>2/</u>	Cover Crops <u>3/</u>
Alfalfa	Barley	Radish, forage, oilseed
Alsike Clover	Corn (grain)	Alsike Clover
Birdsfoot Trefoil	Millet	Annual Ryegrass
Kentucky Bluegrass	Milo	Barley
Lespedeza, Korean, common	Oats	Buckwheat
Orchardgrass	Popcorn	Canola/rape
Perennial Ryegrass	Rye	Cowpeas
Red Clover	Sorghum	Crabgrass (red river)
Redtop	Sorghum-Sudangrass Hybrids	Crimson Clover
Smooth Brome	Triticale	Field Peas/winter peas
Tall Fescue	Wheat	Hairy Vetch
Timothy	<p><b>Footnotes:</b></p> <p><u>1/</u> Cover must be grown for two years or more.</p> <p><u>2/</u> Full-season crops managed to leave 50 percent or more residue cover. Not harvested for silage or biomass.</p> <p><u>3/</u> Cover to be established early enough in growing season to provide adequate cover.</p>	Oats
White Clover		Red Clover
Wildrye, Canada, Riverbank, Virginia		Rye
Big Bluestem		Sorghum-Sudangrass Hybrids
Prairie Dropseed		Sweetclover
Eastern Gamagrass		Triticale
Indiangrass		turnips
Little Bluestem		Wheat
Sideoats Grama		Woollypod Vetch
Switchgrass		
Native Forbs and Legumes		