

Soil Erosion Enhancement Activity – SOE04 - Continuous no-till



Enhancement Description

This enhancement is for using a continuous no-till, strip till, or direct seeding method of planting throughout the planned rotation. High residue levels are maintained by including high residue-producing crops, or by low residue crops followed by a cover crop in the rotation. Termination of all cover crops is accomplished using chemical methods or non-chemical methods, such as flail mowing, roller crimper and frost kill.

Land Use Applicability

Cropland

Benefits

Use of continuous no-till, strip till, or direct seeding leaves high levels of crop residue that can reduce erosion by wind and water up to 90%. The result is increased soil organic matter and added weed control as compared to intensively tilled soils with no surface residue. This will in turn, enhance and protect water quality and biotic communities that depend on clean water. Mechanically terminating cover crops using a flail mower or roller crimper can eliminate the use of herbicides, thereby reducing potential offsite water quality problems while leaving the soil undisturbed.

Conditions Where Enhancement Applies

This enhancement applies to all acres of annually planted cropland.

Criteria

Implementation of this enhancement **requires** the use of continuous no-till, strip till, or direct seeding of all crops in the planned rotation. The no-till, strip till, or direct seeding system must incorporate the following activities:

1. Rotations that include only high residue producing crops:
 - a. No cover crop is required if a Soil Tillage Intensity Rating (STIR) ≤ 10 is maintained for the rotation.
 - b. Cover crops, if required:
 - i. Can be a single grass species or a multiple species mixture that includes at least 50% grass or legume adapted for the local area
 - ii. Must be planted using a no-till system
 - c. Use only crops that produce high residue levels throughout the rotation, e.g. corn, wheat



- d. Residue removal is prohibited (Exception: residue removal is allowed for optimal crop production where SCI (Soil Conditioning Index) can be maintained greater than zero and the criterion of 3(c) is still met).
2. Rotations that include low residue crops
 - a. Cover crops must be used after ALL low residue crops, e.g. vegetables, cotton, soybeans
 - b. Plant cover crops using a no till system
 - c. Cover crops can be a single grass species or a multiple species mixture that includes at least 50% grass or legume adapted for local use.
 - d. Maintain a minimum Soil Tillage Intensity Rating (STIR) ≤ 10 for the planned rotation
 - e. Residue removal is prohibited
3. Additional Criteria
 - a. All residues must be uniformly distributed over the entire field
 - b. No full-width tillage is permitted regardless of the depth of the tillage operation
 - c. Field(s) must have a soil loss at or below the soil tolerance (T) level for wind and/or water erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of ≤ 10 for each rotation

Adoption Requirements

This enhancement is considered adopted when the STIR criteria, residue and/or cover crops listed above have been implemented on the land use acreage.

Documentation Requirements

Documentation for each field where this enhancement is applied:

1. Planned crop rotation showing cover crops that will be used after low residue crops,
2. Planting method used for each crop in the rotation (no-till, strip till, direct seeding),
3. List of all other potential ground disturbing farming operations,
4. Method of cover crop termination, e.g. chemical, flail mowing, roller crimper, or combination,
5. Dates for farming operations,
6. Map showing fields and acreage, and
7. Photographs of planted crops.

Michigan Supplement

SOE 04

High residue producing crops in Michigan are:

Alfalfa	Spring Barley
Alfalfa/Brome Grass or Alfalfa / (grass) mixtures	Sweet Clover
Corn Grain; CG narrow rows; Corn seed	Sweet Corn
Grain Sorghum	Winter Cereal Rye
Oats	Winter Wheat
Red clover	

Low Residue producing crops in Michigan are:

Carrots	Potatoes
Celery	Seed Corn
Corn Silage	Snap Beans
Dry Beans	Sorghum Silage
Mint	Soybeans
Oatlage	Sugar Beets
Onions	Sunflowers
Pickles (Cucumbers)	Vegetables (all)

Documentation

Document the planned high residue percent cover needed for each crop in the crop rotation with the Line Transect Method. The line transect job sheet can be found in the NRCS MI eFOTG Section IV or the Conservation tillage Job sheets. Complete a minimum of 5 transects in each field for greater accuracy per the National Agronomy Manual. Visual confirmation with a trained eye is also acceptable. The Conservation Tillage Job Sheets can be used to document the residue cover.