United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

E345E

CONSERVATION STEWARDSHIP PROGRAM

Reduced tillage to reduce energy use

Conservation Practice 345: Residue and Tillage Management, Reduced Till

APPLICABLE LAND USE: Crop (Annual & Mixed)

RESOURCE CONCERN: Energy

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description:

Establish a reduced tillage system which reduces total energy consumption associated with field operations by at least 25% compared to conventional tillage systems (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.

Criteria:

- Uniformly distribute residues over the entire field. Removing residue from the row area prior to or as part of the planting operation is acceptable.
- Do not burn crop residues.
- The Soil Tillage Intensity Rating (STIR) value shall include all field operations that are performed during the crop interval between harvest of the previous cash crop and harvest or termination of the current cash crop (includes fallow periods). The crop STIR value rating shall be no greater than 80, and no primary inversion tillage implements (e.g. moldboard plow) shall be used.
- Reduce the total energy consumption associated with field operations by at least 25% compared to the benchmark condition. The current NRCS wind and water erosion

prediction technologies must be used for determining energy use to document energy use reductions.

CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide NRCS with the current (benchmark) and planned crop rotation and tillage operation(s) used for each crop.

Field	Acres	Current (Benchmark) Crops (in sequence)	Length of Crop Rotation (years)

Field	Crop	Current (Benchmark) Field Operation	Timing of Field Operation (month/year)

Field	Acres	Planned Crops (in sequence)	Length of Crop Rotation (years)

Field	Crop	Planned Field Operation	Timing of Field Operation (month/year)

- ☐ During implementation, notify NRCS of any planned changes in crops, crop rotation, or field operations to verify the planned system meets the enhancement criteria.
- ☐ During implementation, no residue will be burned.
- ☐ During implementation, all residues will be uniformly distributed over the entire field. Removing residue from the row area prior to or as part of the planting operation is acceptable.
- ☐ During implementation, no primary inversion tillage implements (e.g. moldboard plow) will be used.
- ☐ During implementation, reduce the total energy consumption associated with field operations by at least 25% compared to the current benchmark tillage system.
- ☐ After implementation, if changes to the rotation were made, complete the tables above to document the applied Conservation Crop Rotation for the contract period and provide to NRCS.

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, use information provided from the participant to calculate the Soil Tillage Intensity Rating values and energy consumption for both the current system and the planned system using the approved NRCS wind and water erosion prediction technologies. Verify the Soil Tillage Intensity Rating value is no greater than 80 for each crop in the planned rotation and total energy consumption is reduced by at least 25%.
  Current STIR values = _____ and Energy Consumption = _____
  Planned STIR values = _____ and Energy Consumption = _____
- ☐ During implementation, evaluate planned changes in crops, crop rotation, or field operations to verify the planned system meets the enhancement criteria.
- ☐ After implementation, if changes were made to the planned crops, crop rotation, or field operations, use information provided from the participant to calculate the Soil Tillage Intensity Rating values and total energy consumption to document that the applied rotation met the enhancement criteria.
  Applied STIR values = _____ and Energy Consumption = _____

CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

345 - Residue and Tillage Management, Reduced Till
Implementation Requirements

United States Department of Agriculture
Natural Resources Conservation Service

Producer: ______________________ **Project or Contract:** ______________________

Location: ______________________ **County:** ______________________

Farm Name: ______________________ **Tract Number:** ______________________

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

Index

____ Cover Sheet

Specifications
[illegible]

____ Operation & Maintenance

Utility Safety / One-Call System Information

Description of work:

NRCS Review Only

Designed By: ______________________ **Date:** ______________

Checked By: ______________________ **Date:** ______________

Approved By: ______________________ **Date:** ______________

345 - Residue and Tillage Management, Reduced Till
Implementation Requirements

The Practice Purpose(s): (check all that apply)

__ Reduce sheet, rill, and wind erosion.

__ Reduce tillage-induced particulate emissions.

__ Maintain or increase soil quality and organic matter.

__ Reduce energy use.

__ Increase plant-available moisture.

Attach a RUSLE2 Profile printout or a WEPS printout that displays:

1. Planned crop(s).
2. Specific equipment operations for each crop.
3. The planned residue amounts: (1) after harvest of the prior crop and (2) for planned residue cover after seeding the planned crop.
4. The Soil Tillage Intensity Rating (STIR) and Soil Condition Index (SCI).

Additional Specifications to Increase Plant-Available Moisture (check all that are appropriate)

___ **Reducing Evaporation from the Soil Surface.** Maintain a minimum 60 percent surface residue cover throughout the year.

___ **Trapping Snow.** Fall tillage operation shall leave the crop stubble in an upright position. Maintain a crop stubble height during the time significant snowfall is expected to occur to:

__ At least 10 inches for crops with a row spacing of less than 15 inches;

__ At least 15 inches for crops with a row spacing of 15 inches or greater.

Maintain these heights over at least 50% of the field.

___ Conduct fall tillage operations as close as possible to perpendicular to the direction of prevailing winds during the time that significant snowfall is expected to occur.

Operation and Maintenance:

Evaluate/measure the crop residues cover and orientation for each crop to ensure the planned amounts and orientation are being achieved. Adjust management as needed to either plan a new residue amount or orientation; or adjust the planting, tillage, or harvesting equipment.

ATTACHMENTS:

___ **RUSLE2 and/or** ___ **WEPS Printouts**