NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, MULCH TILL

(acre)

CODE 329B

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce sheet and rill erosion
- Reduce wind erosion
- Conserve soil moisture
- Manage snow to increase plant available moisture

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes tillage methods commonly referred to as mulch tillage, or chiseling and disking. It applies to stubble mulching on summer fallowed land, to tillage for annually planted crops, and to tillage for planting perennial crops.

CRITERIA

General Criteria Applicable to All Purposes Named Above

Loose residues to be retained on the field shall be uniformly distributed on the soil surface. Where combines or similar machines are used for harvesting, they shall be equipped with spreaders capable of distributing residue over at least 80 percent of the working width of the header.

Planters, drills, or air seeders shall be equipped to plant in residue distributed on the soil surface or mixed in the tillage layer.

Residue shall not be burned.

Tillage implements shall be equipped to operate through plant residues without clogging, and to maintain residue on or near the soil surface by undercutting or mixing.

The number, sequence, and timing of tillage and planting operations, and the selection of ground-engaging components, shall be managed to achieve the planned amount, distribution, and orientation of residue after planting or at other essential time periods. Acceptable alternative tillage sequences shall be initially determined by a residue budget using locally applicable data on residue production by crops and residue reduction by tillage machines. Further adjustments shall be made as needed during the tillage sequence based on field measurements of remaining residue.

Additional Criteria to Reduce Sheet and Rill Erosion

The amount of randomly distributed, flat residue needed to reduce erosion within the soil loss tolerance (T) or any other planned soil loss objective, shall be determined using current approved water erosion prediction technology. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Calculations shall account for the effects of other practices in the conservation management system.

Tillage operations shall be limited to methods that leave residue on the surface and maintain the planned cover conditions.

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Additional Criteria to Reduce Wind Erosion

The amount and orientation of residue needed to reduce erosion within the soil loss tolerance (T) or other planned soil loss objective shall be determined using current approved wind erosion prediction technology. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Calculations shall account for the effects of other practices in the conservation management system.

Additional Criteria to Conserve Soil Moisture

A minimum quantity of 50 percent residue cover shall be maintained throughout the year. Residue shall be evenly distributed and maintained on the soil surface. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Additional Criteria to Manage Snow to Increase Plant Available Moisture

Stubble shall be left standing as high as feasible by the harvesting operation, but not less than 6 inches in any case Stubble shall remain standing over winter to trap and retain snow. Loose residue may be removed providing that the remaining residue is left standing.

Fall tillage operations shall be limited to undercutting tools such as blades, sweeps, or deep tillage implements such as rippers or subsoilers, in order to maintain stubble in a standing condition through the months when snow occurs.

CONSIDERATIONS

Removal of plant residue by baling or grazing may have a negative impact on resources. These activities should not be performed without full evaluation of impacts on other resources.

Mulch till may be practiced continuously throughout the crop sequence, or may be managed as part of a residue management system that includes other tillage and planting methods.

Production of adequate amounts of crop residues necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and row spacing.

Where improvement of soil tilth is a concern, use of undercutting tools will enhance accumulation of organic material in the surface layer.

The effectiveness of stubble to trap snow increases with stubble height. Variable height stubble patterns may be created to further increase snow storage.

Leaving rows of unharvested crop standing at intervals across the field can enhance the value of residues for wildlife habitat.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and O&M described in this standard.

Specifications shall be recorded according to the ND documentation requirements for this practice.

OPERATION AND MAINTENANCE

No operation and maintenance requirements have been identified for this practice.