

UNITED STATES DEPARTMENT OF AGRICULTURE  
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 system to support one or more of the following:

- ◆ Reduce sheet and rill erosion.
- ◆ Reduce wind erosion.
- ◆ Maintain or improve soil organic matter content and tilth.
- ◆ Conserve soil moisture.
- ◆ Provide food and escape cover for wildlife.

**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 residue to be retained on the field shall be uniformly distributed on the soil surface. Combines shall be equipped with spreaders capable of redistributing residue over at least 80 percent of the working width of the header.

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.

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

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.

A minimum of 30 percent of the soil surface shall be covered by plant residue immediately following the planting of the crop. (Additional crop residue is often needed to reduce soil erosion levels to the soil loss tolerance ("T") value, increase soil organic matter content, improve water quality, and to meet other resource objectives.)

**Additional Criteria To Reduce Sheet And Rill Erosion**

The amount of residue needed to reduce erosion within the soil loss tolerance (T) or any other planned soil loss objective, shall be determined using current approved 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.

### **Additional Criteria To Reduce Wind Erosion**

Maintaining residue cover during critical periods of the growing season can reduce crop damage caused by wind erosion. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed to reduce wind erosion damage.

### **Additional Criteria To Maintain Or Improve Soil Organic Matter Content**

The amount of residue and the number and type of tillage operations needed to achieve the desired soil condition, shall be determined using the current approved soil conditioning index procedure. 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 Provide Food And Escape Cover For Wildlife**

The amount of residue and height of stubble needed to provide cover shall be determined using an approved habitat evaluation procedure. Residues shall not be removed unless it is determined by the habitat evaluation procedure that removal would not adversely affect habitat values. Stubble shall be maintained standing over winter. Tillage shall be delayed until spring, in order to maintain waste grain on the soil surface during winter.

## **CONSIDERATIONS**

Excess removal of plant residue by such means as baling or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plants, and air.

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 methods such as no till.

Production of adequate amounts of crop residue 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 spacings.

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

Burndown herbicides should be applied at least two weeks prior to planting of the next crop to reduce competition from weeds and other vegetation for moisture and nutrients.

To achieve a desired crop stand good seed to soil contact is needed. Proper adjustment of planting equipment is required in all residue management systems.

Crop rotation of all crops (including cover crops) is needed to aid in pest control. Follow proper soil testing, nutrient management, Integrated Crop Management (ICM), and Integrated Pest Management (IPM) techniques.

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

Follow NRCS state policy for considering cultural resources during planning and maintenance.

## **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 using approved specification sheets, guide sheets, narrative statements in the conservation plan, or other acceptable documentation.

Residue amounts shall be determined using the line transect method as described in the National Agronomy Manual.

#### **OPERATION AND MAINTENANCE**

All pesticides used in residue management shall be labeled for their intended use and recommendations shall be accordance with the directions and guidelines of Alabama Cooperative Extension System.

#### **REFERENCES**

ALABAMA PEST MANAGEMENT HANDBOOK; ACES, Current Edition

SOIL TEST FERTILIZER RECOMMENDATIONS FOR ALABAMA; AUBURN UNIVERSITY, AGRONOMY AND SOILS DEPARTMENT, PUBLICATION# 178, May, 1994

NATIONAL AGRONOMY MANUAL

REVISED UNIVERSAL SOIL LOSS EQUATION; Section I, FOTG