

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**RESIDUE MANAGEMENT, NO-TILL AND STRIP-TILL  
(Acre)**

**CODE 329A**

**DEFINITION**

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops in narrow slots or tilled or residue free strips in soil previously untilled by full-width inversion implements.

**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.
- Maintain or improve soil organic matter content and tilth.
- Conserve soil moisture.
- Provide food and cover for wildlife.

**CONDITION WHERE PRACTICE APPLIES**

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

This standard includes tillage and planting methods commonly referred to as no-till, zero-till, slot-plant, row-till, zone-till, or strip-till.

**CRITERIA**

General Criteria Applicable to all Purposes Named Above

A minimum of 30 percent cover of any combination of crop remains and/or volunteer vegetation shall be visible/measurable on the soil surface year-round. Where combines or similar machines are used to harvesting, they shall be equipped with spreaders capable of distributing residue over at least 80 percent of the working width of the header.

Residues shall not be burned.

Residue shall not be disturbed by full-width tillage operations except as explained in Operations and Maintenance.

Planters or drills shall be equipped to plant directly through untilled residue or in a tilled seedbed prepared in a narrow strip along each row by planter attachments such as rotary tillers, sweeps, multiple coulters, in-row chisels, or row cleaning devices.

Field conditions applicable to no-till and strip-till systems include:

- Undistributed or shredded crop residue on previous crops.
- Stubble or residue from small grains or other annuals.
- Established winter or summer cover crops. Cover Crops shall be planted

<p>Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.</p>
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without soil disturbance (top-seeded or drilled) except when sugarcane is plowed out in the fall and a cool season cover crop will be followed by a no-till warm season crop during the fallow year of the sugarcane rotation.

- Permanent sod killed with approved herbicides.

Criteria applicable to seedbed preparation and planting include:

- A minimum of one preplant herbicide application (burndown) shall be applied. Burndown herbicides should be applied four to six weeks prior to planting if possible to kill volunteer vegetation, cover crops, or sod. A second preplant herbicide application shall be applied, if needed, from a week prior to planting, through planting. A preplant herbicide application shall consist of one or more approved preplant herbicides and shall be applied at rates sufficient to control the target species. Approved preplant herbicides are those herbicides labeled for preplant use in Louisiana and recommended by LSU Agricultural Center weed control specialists.
- Seedbed preparation and planting shall be performed in one operation.
- A specially equipped or modified planter shall be used. No-till planting shall be completed in a narrow slot 1-3 inches wide. Strip-till shall be completed in a strip no more than one-third the width of the row. Maximum row width shall not exceed 42 inches except as noted for sugarcane.
- Planting shall be accomplished within dates recommended by the LSU Agricultural Center for specific crops and crop varieties.

- Weed control will be accomplished with approved herbicides. Mechanical cultivation may be used in emergencies. See OPERATION AND MAINTENANCE.
- Fall chiseling or subsoiling necessary for shattering restrictive soil layers may be performed according to limitations in OPERATIONS AND MAINTENANCE.
- In double crop systems, a conventional seedbed may be prepared for the cool season crop. However, the warm season residue will not be incorporated into the soil earlier than four weeks prior to planting the cool season crop. Nutrients for both crops should be applied during seedbed preparation for the cool season crop.

#### Additional Criteria to Reduce Sheet and Rill Erosion

The amount of randomly distributed flat residue needs to reduce erosion to (T) tolerance or any other planned soil loss objective shall be determined using current approved erosion prediction technology.

Row width shall not exceed 42 inches, except during fallow year sugarcane rotations. Seedbed preparation, planting, and nutrient placement shall disturb no more than one-third of the row width. The row area formed by the planting operation shall be level with or no more than 6 inches above the adjacent row middles unless the rows are planted on the contour or across the slope.

Standing row crop stalks shall be shredded using a rotary or flail mower or similar device.

On sloping fields, waterways shall be maintained in perennial grass or legumes.

Additional Criteria to Maintain or Enhance Soil Organic Matter Content

The amount of residue needed to maintain or enhance soil organic matter content shall be determined using the current approved Soil Conditioning Index according to the Guide to Using the Soil Condition Index.

Additional Criteria to Conserve Soil Moisture

Residue shall be evenly distributed and maintained on the soil surface during the growing season or fallow-period to retain soil moisture for crop use by enhancing infiltration or reducing evaporation.

Apply burndown herbicides at least three weeks prior to planting so that weeds and/or cover crops will not compete with the next crop for moisture necessary for germination and early growth.

Additional Criteria to Provide Food and Cover for Wildlife

A minimum of 30 percent cover of any combination of crop remains and/or volunteer vegetation shall be maintained on the soil surface to provide food and cover for wildlife.

Residues shall not be removed unless it is determined by the Louisiana Wildlife Habitat Evaluation for Resource Management Systems that removal will not adversely affect habitat values.

Tillage shall be delayed until the end of the residue management period to maintain the food and cover value of the residue.

**CONSIDERATIONS**

Excess removal of residues 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 the soil, water, air, plant, and animal resources.

No-till or strip-till may be practiced continuously throughout the crop sequence, or may be managed as part of a system which 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 adjustments of plant populations and row spacing.

Maintaining a continuous no-till system will maximize the improvement of soil organic matter content. Also, when no-till is practiced continuously, soil reconsolidation provides additional resistance to sheet and rill erosion.

Minimizing tillage reduces the rate of decomposition of new residue and residual organic matter, allowing conservation or enhancement of soil organic matter content; moisture, nutrient, and pesticide holding capacity; and the environment for biological activity.

The value of residues for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

## PLANS AND SPECIFICATIONS

Specifications shall be prepared for each field according to the Criteria and O&M described in this standard and recorded in narrative statements in the conservation plan. Louisiana Agronomy Technical Note No. 77 provides additional information on no-till and strip-till systems.

Residue amounts shall be determined using the line transect method. Directions for estimating residue cover using the line transect method can be found in the National Agronomy Manual.

Residue amounts shall be recorded using narrative statements in the conservation plan or the No-Till/Strip-Till Residue Management Conservation Practice Job Sheet.

## OPERATIONS AND MAINTENANCE

All pesticides used in no-till and strip-till systems shall be labeled for their intended use in Louisiana and shall meet either of the following conditions:

- Be contained in the current year Louisiana Weed, Insect, and Disease Control Guide published by LSU Agricultural Center annually, or
- Be recommended for their specific purposes by LSU Agricultural Center specialist.

Mechanical cultivation for weed control will be limited to emergency situations, and tillage shall be limited to undercutting operations which minimize burial of surface residue.

Tillage necessary to level ruts or perform deep tillage (subsoiling/chiseling) operations shall be performed in such a manner that a minimum of 30 percent cover of any combination of crop remains and/or volunteer vegetation shall be visible/measurable on the soil surface year-round.

Information concerning retention and burial of crop residue by various tillage implements can be found in the National Agronomy Manual.