

# Residue Management, Mulch Till

(Acre)  
Code 329B

Natural Resources Conservation Service  
Conservation Practice Standard

## I. Definition

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

## II. Purposes

This standard may be applied as part of a conservation management system to reduce inter-rill, rill, and wind erosion.

## III. Conditions Where Practice Applies

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

This practice includes mulch tillage methods commonly referred to as or chiseling, subsoiling, and disking. It applies to tillage for annually planted crops, and to tillage for planting perennial crops.

## IV. Criteria

- A. Residue which is to be retained on the soil surface, shall be uniformly distributed over at least 80% of the equipment harvesting width.
- B. Residues shall not be burned.
- C. Tillage implements shall be equipped to operate through plant residues without clogging and shall maintain residue on or near the soil surface.
- D. Planters, drills, or air seeders shall be equipped to plant in residue.
- E. The management of tillage, planting, and other soil disturbing activities shall be selected to achieve the planned amount, distribution, and vertical orientation (for wind erosion) of residue after planting or at other essential time

periods such as early spring and late fall for wind erosion prone areas.

- F. The amount and vertical orientation (for wind erosion) of residue needed to reduce erosion within the soil loss tolerance (T), or any other planned soil loss objective, such as crop tolerance, shall be done in accordance with the Field Office Technical Guide, Section I, Erosion Protection. Calculations shall account for the effects of other practices in the conservation management system.
- G. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount determined in IV. F.
- H. Estimating percent flat residue cover shall be done using the line-transect method according to UWEX Publication A3533. Estimating percent vertical residue shall be in accordance with other acceptable procedures.
- I. Percent residue shall be measured as soon as possible after planting and at essential time periods for areas prone to wind erosion.

## V. Considerations

- A. Consider the impacts to soil, water, animals, plants, and air. Excess removal of plant residue by means such as baling or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation.
- B. Consider integrating no till or strip till practices as part of the conservation management system.
- C. Consider the selection of high residue producing crops and crop varieties in the rotation, cover crops, adjustments of plant populations, and row spacing to enhance production of adequate amounts of crop residue.

- D. Consider that residue amounts will vary based on tillage equipment, speed, depth, and attachments. Undercutting tools may improve soil tilth.
- E. Consider that while shredding may decrease equipment plugging, it may increase burial and over-winter decomposition of surface residue.
- F. Consider tilling and planting across the slope or perpendicular to prevailing winds.
- G. Wildlife habitat and food value can be enhanced by leaving residue on the surface and leaving rows of unharvested crop standing at intervals across the field.

Wolkowski, R. P., 1997. Row fertilizer for in-row tillage systems. Proceedings of the Wisconsin Fertilizer, Agrilime, and Pest Management Conference. 36:239 - 248. University of Wisconsin - Madison.

Wollenhaupt, N.C. and J. Pingry. Estimating Residue Using the Line Transect Method. University of Wisconsin - Extension, Bulletin A3533.

## VI. Plans and Specifications

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Consideration, and Operation and Maintenance described in this standard. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

## VII. Operation and Maintenance

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

## VIII. References

Kelling, K.A., L.G. Bundy, S.M. Combs, and J.B. Peters, 1997. Soil Test Recommendations for Field, Vegetable, and Fruit Crops. University of Wisconsin - Extension, Bulletin A2809.

Moldenhauer, W.C. and Mielke, L.N., Crop Residue Management to Reduce Erosion and Improve Soil Quality, North Central, Conservation Report Number 42, (United States Department of Agriculture, Agriculture Research Service, November 1995).

USDA, Natural Resources Conservation Service, Estimates of Residue Cover Remaining after Single Operation of Selected Machines, Technical Note - Agronomy - WI-4, (USDA NRCS, December 22, 1993).