

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**RESIDUE MANAGEMENT, RIDGE TILL**

(Acre)

**CODE 329C**

**DEFINITION**

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops on pre-formed ridges alternated with furrows protected by crop residue.

**PURPOSES**

This practice may be applied to support one or more of the following purposes:

- Reduce sheet and rill erosion
- Reduce wind erosion
- Maintain or improve soil organic matter content
- Manage snow to increase plant-available moisture
- Modify cool wet site conditions
- 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 and planting methods commonly referred to as ridge till or ridge planting. It does not include no-till planting on ridges, or bedding or listing operations that bury crop residues.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Following crop harvest and any secondary residue removal, residues shall remain on the surface until planting with no additional disturbance except for normal weathering.

Ridge height shall be maintained throughout the

harvest and winter seasons by controlling equipment or livestock traffic.

After planting, residues shall be maintained in the furrows until the ridges are rebuilt by cultivation. Ridges shall be rebuilt to their original height and shape during the last row cultivation.

Loose residues to be retained on the field shall be uniformly distributed on the soil surface. Combines shall be equipped with straw spreaders capable of redistributing residue over at least 80 percent of the working width of the header. Cultivation and planting equipment designed to operate on ridges shall be used, such as cultivators equipped with ridge-building attachments, and planters equipped with ridge-planting attachments such as row-cleaning devices and guidance systems.

**Stable Outlets.** Stable outlets must exist where ridges direct runoff to areas of concentrated flow. Grassed waterways, water and sediment control basins, underground outlets, or other suitable practices can be used to protect these areas.

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

**Maximum Row Grade.** Row grades shall not exceed :

10-Year EI <sup>1</sup>	Maximum Row Grade (%) <sup>2</sup>
<100	9
100 – 150	7
>150	6

<sup>1</sup> EI is the measurement of a storm's energy and intensity. A 10-Year EI is the value of the energy and intensity of a storm likely to reoccur every 10 years in a given location. County EI values are available in the climate section of RUSLE2.

<sup>2</sup> Based on existing water erosion prediction technology.

If irrigation is used with this practice, use the row

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grade limitation for the next higher 10-year storm EI value.

Where residue cover is less than 30 percent, use the maximum row grade for the next higher 10-year storm EI value.

The amount and orientation 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, such as baling or grazing, shall be limited to retain the amount needed to assure adequate protection.

Planting and fertilizer placement shall disturb no more than one-third of the row width. Soil and residue removed from the top of the ridge shall be moved into the furrow between the ridges.

After planting, the top of the ridge shall be maintained at least 3 inches higher than the furrow between the ridges.

The ridge shall be shaped to prevent erosion along the row by directing runoff to the protected furrow area.

#### **Additional Criteria to Reduce Wind Erosion**

The amount and orientation 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.

#### **Additional Criteria to Maintain or Improve Soil Organic Matter Content**

The amount of residue needed to achieve a zero or positive Soil Conditioning Index (SCI) shall be determined using the current NRCS approved 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.

Cultivation to rebuild ridges shall be done using tools that maintain residues in the surface layer.

#### **Additional Criteria to Manage Snow to Increase Plant-Available Moisture**

Stubble shall be left standing as high as possible by the harvesting operation, but not less than 6 inches. Stubble shall remain standing over winter to trap and retain snow. In cases where a 6-inch stubble height cannot be achieved, ridges shall be oriented not to exceed 45 degrees from perpendicular to the prevailing wind direction during periods of expected snow cover.

#### **Additional Criteria to Modify Cool Wet Site Conditions**

Ridge height prior to planting shall not be less than 6 inches.

#### **Additional Criteria to Provide Food and Escape Cover for Wildlife**

The Oklahoma Wildlife Upland Habitat Management (645) standard and specification will be used as guidance to determine food and cover requirements for specific wildlife species. Stubble shall remain standing over winter.

## **CONSIDERATIONS**

Burning of plant residue or excess removal of 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 resources.

Ridge till may be practiced continuously throughout some crop sequences, or may be managed as part of a residue management system that includes other tillage and planting methods such as mulch till or no till. In mixed systems, ridges must be periodically re-established.

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 population and/or row spacing.

Since row cultivation is typically used for weed control and to reform ridges, this practice has the potential to reduce herbicide requirements.

Where improvement of soil tilth is a concern, continuous ridge planting will allow organic material to accumulate in the surface horizon.

Reconstruction of ridges in the same row area year after year will maximize organic matter buildup and biological activity in the row.

Soil compaction may be reduced by controlled traffic, where wheel traffic from all operations is limited to the area between designated rows or traffic areas.

Field borders planted to permanent vegetation can assist in unobstructed turning, elimination of end rows and in providing travel lanes for farming operations.

Not harvesting crop rows at intervals across the field can enhance the value of residue cover and food for wildlife.

## **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 Operation and Maintenance described in this standard. Specifications shall be recorded using approved job sheets, narrative statements in the conservation plan or other acceptable documentation.

## **OPERATION AND MAINTENANCE**

No operation and maintenance requirements, national in scope, have been identified for this practice.