

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**CROSS WIND RIDGES**

(Ac.)

CODE 588

**DEFINITION**

Ridges formed by tillage, planting or other operations and aligned across the direction of erosive winds.

**PURPOSE**

Reduce soil erosion from wind.

Protect growing crops from damage by wind-borne soil particles.

Reduce soil particulate emissions to the air.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to cropland.

It is best adapted on soils that are stable enough to sustain effective ridges and cloddiness, such as loamy and clayey soil materials.

It is not well adapted on soils with lower aggregate stability such as sandy soil materials and certain organic soils.

**CRITERIA**

**General Criteria Applicable to All Purposes**

The ridge orientation, height, spacing, and time period that ridges are present shall be determined using the current wind erosion prediction technology in Section 1 of the FOTG and shall account for other practices in the conservation management system.

The orientation of ridge building operations shall be as close to perpendicular to the predominant wind erosion direction as is practical for the farming system on the field or

site. In no case shall the orientation exceed 45 degrees from perpendicular to the erosive wind direction during a critical wind erosion period.

In no case shall the ridge spacing be more than four times the ridge height during wind erosion periods.

**Additional Criteria to Protect Growing Crops from Damage by Wind-Borne Soil Particles.**

During those periods when sensitive crops are susceptible to damage by wind-borne soil particles, wind erosion shall not exceed the crop tolerance to blowing soil as specified in the National Agronomy Manual, other accepted references or other planned crop protection objectives.

**CONSIDERATIONS**

To be most effective, cross wind ridges should be oriented perpendicular to the direction of erosive winds.

Transport of wind-borne sediment and sediment-borne contaminants offsite can be reduced by this practice when used in a resource management system.

Adjacent fields, roads or field corners may need treatment to stop saltation of soil particles onto fields protected by cross wind ridges.

Cross wind ridges are most effective where the soil erodibility index, (I) is 104 or lower. To be effective in coarse textured soils such as very fine sandy loams, fine sandy loams, sandy loams, and sand soils cross wind ridges should be established when soil is moist.

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Ridges on these soils will deteriorate quickly and shorten the protection period.

Cross wind ridges may be created at right angles to the predominant erosive wind direction on bare unprotected fields as a form of emergency tillage to reduce wind erosion. However, cross wind ridges generally have a temporary impact on reducing wind erosion; which may not last throughout the critical wind erosion period.

Cross wind ridges are most effective when used in combination with other practices in a conservation management system to reduce wind erosion. This can include practices such as Windbreaks/Shelterbelts Establishment (380), Cross Wind Trap Strips (589C), Stripcropping (585), and Herbaceous Windbarriers (603) that reduce unsheltered distance. It can also include Conservation Crop Rotation (328), Cover Crop (340) and Residue and Tillage Management (329, 344, 345, or 346), that provide vegetative cover at the appropriate time.

Where water erosion along the furrows formed by ridges is a concern, the hazard can be reduced by farming across the slope according to the standards for Contour Farming (330) and Contour Buffer Strips (332).

### PLANS AND SPECIFICATIONS

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

Specifications shall be recorded using Nebraska Conservation Planning Sheet 18 to specify time frames, ridge height, spacing and direction of rows. Other equivalent specification sheets, job sheets, narrative statements in the conservation plan can be utilized.

### OPERATION AND MAINTENANCE

Ridges shall be established or re-established by equipment such as chisel plows, drills with hoe openers, or other implements that form effective ridges.

After establishment, ridges shall be maintained through those periods when wind erosion is expected to occur, or until growing crops provide enough cover to protect the soil from wind erosion.

If ridges become ineffective they shall be re-established unless doing so would damage a growing crop.

### REFERENCES

Skidmore, E.L. and N.P. Woodruff. 1968. Wind erosion forces in the United States and their use in predicting soil loss. USDA, Agriculture Handbook 346.

[USDA, NRCS. 2002. National Agronomy Manual. 190-V. 3<sup>rd</sup> ed., Part 502, Wind erosion.](#)

USDA, NRCS. 1993. Soil survey manual. USDA Handbook 18.