

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

CROSS WIND RIDGES

(Ac.)

CODE 588

DEFINITION

Ridges formed by tillage, planting or other operations and aligned perpendicular to prevailing wind direction during critical wind erosion periods.

PURPOSE

This practice supports one or more of the following purposes:

- Reduce soil erosion from wind
(Resource concern: Soil erosion - Sheet, rill, & wind erosion).
- Protect growing crops from damage by windblown soil particles
(Resource concern: Degraded plant condition – Undesirable plant productivity and health).
- Reduce soil particulate emissions affecting air quality
[Resource concern: Air quality impacts – Emissions of particulate matter (PM) and PM precursors].

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland with soils that are stable enough to sustain effective ridges and cloddiness, such as loamy and clayey soils.

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

CRITERIA

General Criteria Applicable to All Purposes

Determine the ridge orientation, height, spacing, and time period that ridges are present by using the currently approved wind

erosion prediction technology. Be sure to account for other practices in the conservation management system.

The orientation of ridges cannot exceed 45 degrees from perpendicular to erosive wind direction.

Spacing between ridges cannot be more than 4 times the height of the created ridges.

Additional Criteria to Protect Growing Crops from Damage by Windblown Soil Particles.

The planted crops must be tolerant of the expected erosion as defined in the National Agronomy Manual (Table 502-1), and meet the planned conservation and production objectives.

CONSIDERATIONS

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

Transport of windblown 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.

To be effective on 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. 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 and 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.

PLANS AND SPECIFICATIONS

Prepare and record specifications for establishment and operation of this practice for each field according to the Criteria, Considerations, and Operation and Maintenance described in this standard.

OPERATION AND MAINTENANCE

Established or re-establish ridges with equipment such as chisel plows, drills with hoe openers.

Maintain ridges through periods when wind erosion is expected to occur, or until growing crops provide enough cover to protect the soil from wind erosion.

Re-establish ridges when they become ineffective 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, ARS. 2006. The wind erosion prediction system, (WEPS ver. 1.2.9), User Manual, 2011 Wind Erosion Research Unit, Manhattan, Kans.

USDA, NRCS. 2011. National Agronomy Manual. 190-V. 4th ed., Part 502, Wind erosion.

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