



**Natural Resources Conservation Service
CONSERVATION PRACTICE STANDARD**

CROSSWIND RIDGES

Code 588

(Ac)

DEFINITION

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

PURPOSE

- Reduce wind erosion—soil erosion
- Improve plant productivity and health—degraded plant condition
- Reduce emissions of particulate matter—air quality impacts

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 soil materials. It is not well adapted on sandy soils and certain organic soils.

CRITERIA

General Criteria Applicable to All Purposes

Design the ridge orientation, height, spacing, and time period that ridges are present using the currently approved wind erosion prediction technology and account for other practices in the conservation management system.

Design the orientation of ridges during critical erosion periods not to exceed 45 degrees from perpendicular to erosive wind direction.

Design the spacing between ridges to be no more than four times the designed height of the created ridges.

Additional Criteria to Improve Plant Productivity and Health

The predicted soil loss must not exceed the crop tolerance of sensitive crops to damage by windblown soil particles as specified in the NRCS National Agronomy Manual (table 502-1, “Crop tolerance to blowing soil”) and the planned conservation and production objectives.

CONSIDERATIONS

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

NRCS reviews and periodically updates conservation practice standards. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State office](#) or visit the [Field Office Technical Guide](#).
USDA is an equal opportunity provider, employer, and lender.

The particulate matter (PM10) component of wind erosion (including soil-borne contaminants) can be reduced with this practice to reduce wind erosion as a purpose.

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

To be effective on coarse-textured soils such as very fine sandy loams, fine sandy loams, sandy loams, and sandy soils crosswind ridges should be established when soil is moist. Ridges on these soils will deteriorate quickly and shorten the protection period.

Crosswind 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, crosswind ridges generally have a temporary impact on reducing wind erosion and may not last throughout the critical wind erosion period.

Use and timing of crosswind ridges practice standard to reduce wind erosion during a planned rotation is most effective when used in combination with other practices in a conservation management system. Crosswind ridges are most effective when used in combination with other practices in a conservation management system to reduce wind erosion.

PLANS AND SPECIFICATIONS

Prepare specifications for each site and purpose on the implementation requirements document.

Documentation must include—

- Erosive wind direction.
- Critical wind period(s).
- Planning soil map unit.
- Crop rotation.
- Soil particle crop tolerance.
- Ridging operation.
- Ridging timing(s).
- Ridge height and spacing.

OPERATION AND MAINTENANCE

Establish ridges with equipment such as chisel plows, drills with hoe openers, or other implements that form effective ridges.

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

Reestablish 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.

“The Wind Erosion Prediction System WEPS 1.5 User Manual”, USDA-ARS Agricultural Systems Research Unit Fort Collins, Colorado USA, June 2016 URL: <https://infosys.ars.usda.gov/WindErosion>.

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

USDA, NRCS. 1993. Soil Survey Manual. USDA Handbook 18.