

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

CROSS WIND TRAP STRIPS

(ACRE)

Code 589C

DEFINITION

Herbaceous cover resistant to wind erosion established in one or more strips across the prevailing wind erosion direction.

PURPOSES

This practice may be applied as part of a conservation system to support one or more of the following:

- ◆ Reduce soil erosion from wind.
- ◆ Induce deposition and reduce transport of wind-borne sediment and sediment-borne contaminants downwind.
- ◆ Protect growing crops from damage by wind-borne soil particles.
- ◆ Provide food and cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

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

CRITERIA

General Criteria Applicable To All Purposes Named Above.

Number of Strips. A cross wind trap strip system shall consist of one or more strips across the prevailing wind erosion direction. This practice may also serve as a component of a conservation system that includes Conservation Practice Standard 380, Windbreak/Shelterbelt Establishment.

Width of Trap Strips. Trap strips shall be wide enough to trap saltating soil particles and store wind-borne sediments originating

upwind.

The width of the trap strip shall be at least 15 feet, when vegetation or stubble in the strip will normally be one foot or more in height during periods when wind erosion is expected to occur.

The minimum width of the trap strip shall be at least 25 feet when the effective height of the vegetation or stubble in the strip will normally be less than one foot during periods when wind erosion is expected to occur.

The strip width may be adjusted upwards to meet the equipment needs of the client.

Vegetative Cover. Trap strips may consist of perennial or annual plants, growing or dead. Vegetation may consist of warm or cool season grasses, legumes, or legume-grass mixtures that meet the following criteria. Plant materials shall be selected for the following characteristics:

- ◆ Adaptation to the site.
- ◆ Erect during wind erosion periods.
- ◆ Tolerant to sediment deposition.
- ◆ Drought tolerant.
- ◆ Ability to withstand snow drifting.
- ◆ Compatibility to secondary purposes (i.e. provide wildlife food and cover).

The standard includes the location of cross wind trap strips and their management for identified uses. Criteria for the establishment of perennial herbaceous vegetation are in practice standard [Conservation Cover \(327\)](#). Criteria for establishment of standing residue are in practice standards Residue Management, Seasonal [\(344\)](#) and Residue Tillage Management [\(329, 345, and 346\)](#).

Additional Criteria To Reduce Soil Erosion From Wind.

Location of Trap Strips. Trap strips established for this purpose shall be located as follows:

- ◆ At the windward edge of fields; or
- ◆ Immediately upwind from areas to be protected from erosion or deposition; or
- ◆ In recurring patterns interspersed between erosion-susceptible strips.

Direction and Width of Erosion-Susceptible Strips. The effective width of strips shall be measured along the prevailing wind direction during those periods when wind erosion is expected to occur. It shall not exceed the width determined to keep potential soil erosion below the established soil loss tolerance (T).

When the direction of trap strips deviates from being perpendicular to the prevailing wind erosion direction, the width of the erosion-susceptible strips shall be correspondingly reduced so that soil loss tolerance (T) is not exceeded.

Strip orientation shall not result in an angle of deviation that exceeds 45 degrees during the management period(s) when wind erosion is expected to occur. The angle of deviation is the angle between an imaginary line perpendicular to the long dimension of the strip and the prevailing wind erosion direction.

The width of strips shall be determined using current approved wind erosion prediction technology. Calculations shall account for the effects of other practices in the conservation management system.

Additional Criteria To Induce Deposition And Reduce Transport Of Wind-borne Sediment And Sediment-borne Contaminants Downwind.

Location of Trap Strips. Trap strips shall be established immediately upwind from areas to be protected from sediment deposition. There shall be no erosion-exposed area located

between the trap strip and the area to be protected from sediment deposition.

Additional Criteria To Protect Growing Crops From Damage By Wind-borne Soil Particles.

Placement of Trap Strips. Trap strips shall be established immediately upwind from areas used for sensitive crops. There shall be no erosion-exposed area located between the trap strip and the crop to be protected.

Direction and Width of Strips of Sensitive Crops. The effective width shall be measured along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles. The effective width shall not exceed the width permitted by the crop tolerance to wind erosion*, as specified in Field Office Technical Guides, other accepted technical references, or other planned crop protection objective.

*Crop tolerance to wind erosion is the maximum rate of soil blowing that crop plants can tolerate without significant damage due to abrasion, burial or desiccation.

When the direction of trap strips deviates from being perpendicular to the prevailing wind erosion direction, the width of strips planted to sensitive crops shall be correspondingly reduced so that estimated soil loss does not exceed crop tolerance.

Type of Trap Strips.

Annual crop barriers harvested 12-18 inches above the ground such as corn, sorghum, or sunflowers shall consist of 10-12 feet (four rows at 30-36 inch spacing). Annual crops such as unharvested small grain shall have a minimum barrier width of 12 feet.

Permanent crop barriers shall consist of tall stiff-stemmed grasses such as Switchgrass, Big Blue Stem, Indiangrass, Eastern Gama grass, or Tall Wheatgrass. Each barrier will consist of a minimum of four rows on sandy soils and two rows on other soils. Rows may be spaced 6 to 42 inches apart.

The width of the crop strips shall be determined using current approved wind erosion prediction technology to estimate wind erosion during specific cropstage periods. Calculations shall account for the effects of other practices in the conservation management system.

Additional Criteria to Provide Food and Cover for Wildlife.

Vegetative Cover. Trap strips shall consist of vegetation that provides food and/or cover for the targeted wildlife species. These strips can serve as travel lanes for all species and serve as loafing or day roosting cover for upland birds. To enhance the value for wildlife purposes, strips should either be composed of a mixture of introduced stiff stemmed grasses with legumes or stiff stemmed, upright native grasses. Refer to Conservation Practice Standard 645, Upland Wildlife Habitat Management, for recommended species and seeding mixtures.

Trap Strip Height. The minimum height of trap strips to provide wildlife value for targeted species throughout the year should be:

Growing Season – Introduced grass and legumes should average a minimum of 8 inches. Native grasses should average 12 inches over the growing season.

Post-harvest – Introduced species should be minimum of 1.5 feet through the winter months and natives should be minimum of 3 feet. Taller and wider strips provide better travel and cover condition for winter wildlife uses. These heights should be maintained up to seedbed preparation time when they may be mowed or burned prior to seeding the new crop.

Width of Cross Wind Trap Strip. The minimum width for this purpose is 30 feet.

CONSIDERATIONS

The effectiveness of Cross Wind Trap Strips is maximized when strips are oriented as close to perpendicular as possible to the prevailing

wind erosion direction for the period for which the system is designed.

Selection of plants for use in trap strips should favor species or varieties tolerant to herbicides used on adjacent crops or other land uses. When trap strips are designed to enhance wildlife habitat, plant species diversity within the strip should be encouraged. Trap strips that result in multiple structural levels of vegetation within the strip will maximize wildlife use.

Some plants are damaged by blowing wind as well as by wind-borne sediment. In such cases, the spacing between trap strips may have to be reduced from that obtained using wind erosion prediction technology.

Drifting snow or grazing by wildlife may reduce the trapping capability of trap strips. In such cases, other conservation practices, including the residue tillage management practices (344, 329, 345, or 346), etc., may be used with, or as alternatives to, trap strips to achieve the conservation objective.

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 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.

OPERATION AND MAINTENANCE

After establishment, perennial trap strips shall be fertilized as needed to maintain plant vigor. Noxious weeds shall be controlled with mowing or chemicals.

Mowing or grazing of trap strips shall be managed to allow regrowth to the planned height before periods when wind erosion or crop damage is expected to occur.

Wind-borne sediment accumulated in trap strips shall be removed and distributed over the surface of the field as determined appropriate.

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Trap strips shall be re-established or relocated as needed to maintain plant density and height.

When barriers are designed to enhance wildlife habitat, they shall not be mowed or pruned unless their height and width exceeds that required to obtain the wildlife objective and they become competitive with the adjoining land use. When mowing or pruning is necessary, it shall be done only during non-nesting season.

REFERENCES

The following publications are available at NRCS field offices or on the Iowa NRCS Home Page at: <http://www.ia.nrcs.usda.gov>.

- NRCS [Residue Management, Seasonal, Practice Code 344](#).
- NRCS [Residue Management, No-till/Strip Till/Direct Till, Practice Code 329](#).
- [NRCS Residue Tillage Management, Mulch till, Practice Code 345](#).
- [NRCS Residue Tillage Management, Ridge till, Practice Code 346](#).
- [NRCS Conservation Cover, Practice Code 327](#).
- National Agronomy Manual, Part 502 – Wind Erosion.
- Field Office Technical Guide, Section I, Wind Erosion Equation (WEQ).