

NATURAL RESOURCES CONSERVATION SERVICE
MONTANA 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 management 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 susceptible to wind erosion.

CRITERIA

General Criteria Applicable To All Purposes Named Above

Number of Strips. A crosswind 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 Standards 589B, Cross Wind Stripcropping; 603, Herbaceous Wind Barriers; or 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.

Vegetative Cover. Trap strips may consist of perennial or annual plants, growing or dead. Vegetation may consist of warm season 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 **critical** wind erosion periods.
- Tolerant to sediment deposition.
- Ability to withstand snow drifting.
- Compatibility to secondary purposes (i.e. provide wildlife food and cover).

Criteria for the establishment of perennial herbaceous vegetation will be based on procedures in practice specification 589C.

Refer to **the Montana NRCS Plant Materials Technical Note MT-46 for seeding rate and recommended cultivars.**

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

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Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version, of this standard contact the Natural Resources Conservation Service.

Note: This type of font (AaBbCcDdEe 123...) indicates NRCS National Standards.
This type of font (AaBbCcDdEe 123...) indicates Montana Supplement.

- 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 **designated** periods when wind erosion is expected to occur. **Unprotected strips** 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 **WEQ Management Period Method of predicting** wind erosion prediction. 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. **Trap strips shall be designed so that** erosion-exposed areas **are not** 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 crops 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.

The width of the crop strips shall be determined using **the WEQ Management Period Method of predicting** wind erosion during specific crop stage 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. Refer to Conservation Practice Standard 645, Upland Wildlife Habitat Management, for recommended species and seeding mixtures.

Width of Cross Wind Trap Strip. The minimum width for this purpose is 30 feet. **Trap strips may be located next to wetland areas, drainage ditches, or road ditches for maximum wildlife benefits.**

Trap Strip Height. The minimum height of trap strips designed for this purpose shall have a minimum expected height of 1.5 to 3.0 feet to provide adequate cover for wildlife species.

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, **vegetative** 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 management practices (329A, 329B, or 329C); Conservation Practice Standards 603, Herbaceous Wind Barriers; 589B, Cross Wind Stripcropping; or 380, Windbreak/Shelterbelt Establishment, may be used with, or as alternatives to, trap strips to achieve the conservation objective.

Crops most susceptible to wind damage include vegetable crops and crop seedlings. Crops that are characteristically tall may be susceptible to lodging, e.g. non-dwarf varieties of small grains.

Trap strips should not be used as travel lanes. Flattened grass is not effective in trapping saltating soil.

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 **the** approved specification sheet, job sheet, **and** 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 **and** nuisance weeds shall be controlled with mowing or **pesticides**.

Mowing or grazing of trap strips shall be managed to allow re-growth 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 **when the depth of entrapped sediment reaches 6 inches**.

Burning of warm season grasses is not allowed unless new growth will obtain the minimum height criteria during design critical periods.

Trap strips shall be re-established or relocated as needed to maintain plant density and height. **A minimum stem density of 50-75 stems per square foot and more than 50% ground cover during critical wind erosion periods shall be maintained for all purposes.**

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.

When fertilizer is applied to maintain vigor and effectiveness, application rates shall be according to soil test analysis and Montana Fertilizer Guidelines, EB 161.

Fertilizer applications will be delayed until after plant emergence and establishment to minimize potential nitrogen or phosphorus leaching or runoff to adjacent surface water.

REFERENCE

National Agronomy Manual, 190-V-NAM, Third Edition, June 2002, Part 502, Wind Erosion.