

NATURAL RESOURCES CONSERVATION SERVICE  
 CONSERVATION PRACTICE STANDARD  
 Cross Wind Stripcropping  
 (Acre)  
 Code 589B

**DEFINITION**

Growing crops in strips established across the prevailing wind erosion direction, and arranged so that strips susceptible to wind erosion are alternated with strips having a protective cover that is resistant to wind erosion.

**PURPOSE**

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

**CONDITIONS WHERE PRACTICE APPLIES**

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

**CRITERIA**

**General Criteria Applicable To All Purposes Named Above**

- a) Number of Strips:  
A cross wind stripcropping system shall consist of at least two strips.
- b) Width and Direction of Strips:  
Strips having protective cover and managed as part of a crop rotation may be the same width as the erosion-susceptible strips or may be narrower, but in any case shall not be less than 8 feet.

The maximum width of strips, measured perpendicular to strip direction, shall not exceed 120 feet.

When the direction of erosion-susceptible strips deviates more than 22 1/2 degrees from perpendicular to the prevailing wind erosion direction, the width of these strips shall be correspondingly reduced.

c) Arrangement of Strips:

Strips susceptible to wind erosion shall be alternated with strips that provide protective cover.

Crops shall be rotated so that protective cover is maintained in alternate strips during those periods when wind erosion is expected to occur.

Two or more strips having protective cover may be next to each other, but strips susceptible to erosion must be separated by a strip providing protective cover.

d) Vegetative Cover:

Vegetation in a stripcropping arrangement consists of crops grown in a planned rotation.

Alternate strips shall be crops or crop residues which provide protective cover during those periods when wind erosion is expected to occur.

Acceptable protective cover includes a growing crop, including grasses, legumes, or grass-legume mixtures, standing stubble, or tilled residue with enough surface cover to provide protection.

**Additional Criteria To Reduce Soil Erosion From Wind**

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

The effective width of strips shall be measured along the prevailing wind erosion direction for those periods when wind erosion is expected to occur and for which the system is designed.

Strip width shall not exceed that permitted by the soil loss tolerance (T), other planned soil loss objective, or the maximum permissible width specified in this standard.

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 Protect Growing Crops From Damage By Windborne Soil Particles**

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 width of strips shall not exceed the width permitted by the crop tolerance to wind erosion\*, as specified in applicable Field Office Technical Guides, other accepted technical references, or other planned crop protection objective.

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

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

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

## **CONSIDERATIONS**

The effectiveness of Cross Wind Stripcropping is maximized when the strips are oriented as close to perpendicular as possible to the prevailing wind erosion direction for the period for which the system is designed.

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

Where this practice is used in combination with the practice, CONSERVATION CROP ROTATION (328), the stripcropping design must be consistent with the crop sequence.

Strip widths may be adjusted, within the limits of the criteria above, to accommodate widths of farm equipment to minimize partial or incomplete passes.

## **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.

### **A. Cropping System and Management**

1. The cropping system has a key role in the success of wind stripcropping. The effective crop for the wind-resistant strip has sufficient height and density to serve as a barrier against wind at the critical erosion period. The season of wind damage restricts our choice of living plants to those that grow mainly during the cool season. Rye is one of the best annuals because of its height and adaptation to a wide range of soil conditions. Conservation cropping systems, crop rotations, and insect and disease control are factors that must be considered in conjunction with wind stripcropping.

- a. The crop used should be planted, fertilized, and managed to maximize growth prior to the wind erosion period.
  - b. Do not mow or graze the crop in the wind-resistant strip until after the wind season.
2. Plant residues provide effective protection for adjacent strips if they have appropriate height and density. Cultivated strips between strips of sericea is an effective system if the sericea is left standing. Milo and millet are annuals that have potential to control wind erosion when left standing over winter.

Rye overseeded with annual lespedeza in late winter will also provide protection.

3. The crop residue on the surface and tillage methods used affect soil blowing on the cultivated strips.
  - a. No-till planting in cover crops or in residue from previous crop is very effective in reducing wind velocities at the soil surface.
  - b. Where conventional tillage is used, leave cover crop or crop residue undisturbed on strip to be cultivated until time to prepare seedbed. This should be delayed as late as possible.

Methods of land preparation that tuck in residue rather than burying keeps the residue in place, which adds to soil protection.

  - c. Perennials can be plowed down earlier than annuals and still leave sufficient residue on the surface to reduce soil blowing.
4. When preparing the seedbed, leave land surface as rough as practical.

## **B. Strip Widths**

1. The effective protective width of the strip is reached when additional width does not change the effectiveness of the barrier.
  - a. The number of wind-resistant strips must be equal to the number of cultivated strips.
  - b. One full row width is the minimum width of protective strip that qualifies for stripcropping. It may be made wider up to the maximum for the cultivated strip, to facilitate use of equipment on the farm and balancing out the cropping system.
2. The height of the wind-resistant crop determines the distance that is protected. The effective protection of most barriers is 10 to 15 times their height. With small grain or other protective crops of equal height, on nearly level land, the maximum width of cultivated strips will be as follows:
  - a. A maximum of 50 feet with conventional land preparation and little or no plant residue on the ground surface.
  - b. A maximum of 80 feet with 25% of the ground surface covered with plant residue at the critical period. (This is equivalent to approximately 750 lbs. of small grain residue per acre on the surface.)
  - c. A maximum of 120 feet with 50% or more of the ground surface covered with plant residue at critical erosion period. (This equivalent to approximately 1,500 lbs. of small grain residue per acre on the surface.)
  - d. When the wind-resistant crop is only 1 crop row wide, the cultivated strip will be no wider than 8 cultivated rows

## **C. Strip Alignment**

1. The greatest protection is provided when strips are aligned at right angles to the wind. The prevailing wind erosion direction for this field office is \_\_\_\_\_ . (each field office or subunit fill in from wind erosion handbook, if applicable) The prevailing wind direction for the field should be shown in the layout notes.
2. There is no practical reduction in area protected up to a 22 1/2 degree deviation from the perpendicular. When strips are laid out with a greater deviation than 22 1/2 degrees, the widths of the cultivated strips should be reduced to the width that is protected.
3. Adjust cultivated strip widths when strip alignment is not perpendicular to prevailing wind erosion direction, as follows:

Cultivated Strip Width Adjustment

Crop condition	Angle of Deviation of Prevailing Wind Direction from Perpendicular				
	0-22-1/2	30°	40°	50°	60°
	Ft.	Ft.	Ft.	Ft.	Ft.
B2a-Conv. prep.	50	45	40	35	30
B2b-25% of ground covered Rd.	80	70	60	50	40
B2c-50% of ground covered Rd.	12	100	90	75	60
B2d-conv. prep.	32	16	16	16	16

4. Row grades should not exceed 4% for a distance in excess of 100 feet.

5. Strip widths may be varied 10% from above to adjust to field conditions, such as row widths, equipment, etc.
6. Strip widths on that portion of the field sheltered by field windbreaks or woods (height X 10) may be increased as appropriate.

**D. General**

1. Wind erosion may be controlled by measures other than wind stripcropping. Consider other alternatives, such as:
  - a. Windbreaks of trees and shrubs.
  - b. Cropping systems and management to provide adequate crop residue.
  - c. Utilize crop residue and practice conservation tillage.
  - d. Critical areas subject to most severe soil blowing should be in rotation with perennials or converted from cropland to pasture, hay or woodland.
  - e. Strips of rye, other small grain, grasses or legumes from 2 to 5 feet wide provide effective protection for narrow, cultivated strips of specialty crops, but are considered temporary in nature and do not qualify for wind stripcropping.
  - f. Manage tall native vegetation on ditch banks, especially on upwind side.

Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

## **OPERATION AND MAINTENANCE**

Erosion-resistant strips in rotation shall be managed to maintain the planned vegetative cover and surface roughness during periods when wind erosion is expected to occur. The protective cover must be adequate to inhibit the initiation of wind erosion and to trap saltating soil particles originating upwind.

Wind-borne sediment accumulated along strip edges shall be removed and distributed over the surface of the field as determined appropriate.