

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD AND SPECIFICATIONS**

HERBACEOUS WIND BARRIERS

(Feet)
CODE 603

DEFINITION

Herbaceous vegetation established in rows or narrow strips across the prevailing wind direction.

PURPOSES

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

- Reduce soil erosion from wind.
- Protect growing crops from damage by wind-borne soil particles.
- Manage snow to increase soil mixture for future cropping.
- 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**

a. Vegetation:

Barriers may consist of perennial or annual plants, growing or dead. Plant materials shall be selected for the following characteristics:

- Adaptation to the site.
- Erect non-spreading growth habit.
- Resistant to lodging.
- Good leaf retention.
- Minimum competition with adjacent crops.

The establishment of perennial herbaceous vegetation will be based on the CRITICAL AREA PLANTING (342) conservation practice standard for permanent vegetation in the Field Office Technical Guide. The establishment of annual herbaceous vegetation will be based on the COVER AND GREEN MANURE CROP (340) conservation practice standard in the Field Office Technical Guide. Refer to locally accepted University Outreach and Extension agronomy guides for adapted variety information and management recommendations.

b. Number of Rows:

Barriers may consist of one row of perennial plants, providing the required porosity can be achieved with a single row and that the row contains no gaps. Annual plants shall be established in two or more continuous rows.

Where two or more rows are required to achieve the required porosity and to avoid gaps, the rows shall be spaced no more than 36 inches apart.

c. Barrier Height:

Barriers shall have a minimum expected height of 2 feet.

Additional Criteria To Reduce Soil Erosion from Wind

a. Barrier Porosity:

Barriers established for this purpose shall be designed to achieve a porosity of 40 to 50 percent.

b. Barrier Direction and Spacing:

When barrier direction deviates from perpendicular to the prevailing wind erosion direction, the spacing between barriers shall be correspondingly reduced.

Conservation practice standards are reviewed periodically. To obtain a current version of this standard contact the Natural Resources Conservation Service.

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The spacing between barriers shall be measured along the prevailing wind erosion direction during those periods when wind erosion is expected to occur. Spacing shall not exceed 10 times the expected height of the barrier plus additional width permitted by the planned soil loss objective.

The effective spacing between barriers 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 From Wind-borne Soil Particles

a. Barrier Porosity:

Barriers established for this purpose shall be designed to achieve a porosity of 40 to 50 percent during the period when growing crops are to be protected.

b. Barrier Direction and Spacing:

When barrier direction deviates from perpendicular to the prevailing wind erosion direction, the spacing between barriers shall be correspondingly reduced.

The spacing between barriers shall be measured along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles. Spacing shall not exceed 10 times the expected height of the barrier plus additional width permitted by the crop tolerance to wind erosion as specified in applicable Field Office Technical Guides or other planned crop protection objectives. 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.

The spacing between barriers 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 Manage Snow To Retain Additional Soil Moisture

a. Barrier Porosity:

Barriers established for this purpose shall be designed to achieve a porosity of 60 to 75 percent during periods of expected snow cover.

b. Barrier Direction and Spacing:

When barrier direction deviates from perpendicular to the prevailing wind direction, the spacing between barriers shall be correspondingly reduced.

The effective spacing shall be measured along the direction of prevailing winds during periods of expected snow cover. For uniform distribution of drifting snow, spacing shall not exceed 12 times the expected height of the barrier.

Additional Criteria To Provide Food and Cover For Wildlife

a. Vegetation:

Barriers established for this purpose shall consist of plants that provide food and cover for the targeted wildlife species.

b. Barrier Width:

Barriers established for this purpose shall have a minimum width of six feet.

c. Barrier Height:

Barriers established for this purpose shall have a minimum expected height of 2 feet or taller that provides adequate cover for the targeted wildlife species.

CONSIDERATIONS

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

Herbaceous wind barriers are more suitable than field windbreaks for use under center pivot irrigation systems due to height considerations. Windbreaks may be located outside the windward edge of the circle.

Spacing between barriers will be adjusted, within the limits of the criteria above, to accommodate widths of farm equipment to minimize partial or incomplete passes.

Selection of plants for use in barriers should favor species or varieties tolerant to herbicides used on adjacent crops.

Plants which may be alternate hosts for pests injurious to adjacent crops should not be selected for use in barriers.

Selection of plant species less palatable to animals may reduce potential damage to barriers from wildlife and still provide desired benefits for targeted species.

Where water erosion from melting snow, accumulated within the barrier system, is a concern, the hazard can be reduced by supporting erosion control practices such as residue management. Where feasible, aligning barriers across the slope can enhance moisture infiltration and reduce erosion.

When barriers are designed to enhance wildlife habitat, plant species diversity and complexity should be encouraged. The use of evergreens in barriers designed to provide winter cover may increase wildlife benefits. Barriers that result in multiple structural levels of vegetation within the barrier will maximize wildlife use. Wide, multi-row barriers offer wildlife better cover and protection from predators.

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

PLANS AND SPECIFICATIONS

Site specification 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.

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

OPERATION AND MAINTENANCE

Annual barriers shall be reestablished each year by planting at recommended dates, leaving rows standing after crop harvest, or leaving standing strips when incorporating a cover crop into the soil.

After establishment, perennial barriers shall be fertilized at the same time and rate as adjacent field crops or as needed by the barriers. Weeds shall be controlled with cultivation, mowing, chemicals, or other acceptable methods. Pesticides will be selected that are compatible with the perennial barriers and crops grown and with local wildlife concerns.

Harvest of hay or seed from perennial barriers, grazing, or mowing for weed control, shall be managed to allow regrowth to the planned height before periods when wind erosion, crop damage, or drifting snow are expected to occur. Annual barriers may be grazed or harvested after critical periods have passed.

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

Barriers shall be re-established or relocated as needed.

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