

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

HERBACEOUS WIND BARRIERS

(Feet)  
Code 603



**DEFINITION**

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

**PURPOSE**

- Reduce soil erosion and/or particulate generation from wind.
- 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.

This standard includes the location of herbaceous wind barriers and their management for identified uses. Criteria for the establishment of perennial herbaceous vegetation are in practice standards for establishing permanent vegetation, NRCS Technical Notes - Plant Materials, or University of Florida, Institute of Food and Agricultural Sciences (UF-IFAS) agronomy guides, for criteria to establish annual herbaceous vegetation.

**CRITERIA**

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

Compliance with federal, state, and local laws, rules and regulations is required.

**Vegetation.** Barriers may consist of perennial or annual plants, growing or dead. Select plant materials based on the following characteristics:

- Adaptation to local soil and climate conditions.
- Stiff, erect non-spreading growth habit.
- Resistant to lodging.
- Good leaf retention.
- Minimum competition with adjacent crops.

**Number of Rows.** Barriers may consist of one row of plants, providing the required porosity can be achieved with a single row, and that the row contains no gaps. Establish more than one row on sites that have conditions, such as sandy soils, that negatively affect the establishment or survival of the barrier.

The minimum spacing when two or more rows are required to achieve the required porosity and to avoid gaps is 36 inches apart.

**Barrier Direction and Spacing.** Determine the effective spacing between barriers by using current approved wind erosion prediction technology, which is found in Florida Erosion Control Handbook. When barrier directions deviates from perpendicular to the prevailing wind erosion direction, then the spacing between barriers should be correspondingly reduced. (See table 502-3 of the National Agronomy Manual, 3<sup>rd</sup> Ed., October 2002, for adjustment factors).

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

**Calculating Porosity.** Determine the number of rows of vegetation needed to achieve the required porosity listed in this standard by using current approved wind erosion prediction technology, which is found in Florida Erosion Control Handbook.

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

Re-establish annual barriers 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, fertilize perennial barriers at the same time and rate as adjacent field crops, or as needed by the barriers. See Florida NRCS Conservation Practice Standard, Nutrient Management, Code 590, for further guidance. Control weeds with cultivation, mowing, chemicals, or other acceptable methods. For further guidance, see Florida NRCS Conservation Practice Standard, Pest Management, Code 595.

Remove accumulated wind-borne sediment in barriers and distribute it over the surface of the field as determined appropriate.

Re-establish or relocate barriers to maintain plant density and height.

Impact to cultural resources, wetlands, and Federal and State protected species shall be evaluated and avoided or minimized to the extent practical during planning, design and implementation of this conservation practice in accordance with established National and Florida NRCS policy, General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH); and The National Environmental Compliance Handbook (NECH).

### **Additional Criteria To Reduce Soil Erosion and/or Particulate Generation from Wind**

**Barrier Height.** The designed minimum height of barriers for this purpose is 1.5 feet during the wind erosion period.

**Barrier Porosity.** The designed porosity for this purpose is 40-50 percent.

**Barrier Direction and Spacing.** Measure the spacing between barriers along the prevailing wind erosion direction during the critical wind erosion period(s). The spacing is not to exceed 10 times the expected height of the barrier plus additional width permitted by the soil loss tolerance (T), or other planned soil loss objective. To determine the effective spacing between barriers use figure 9 in the Wind Erosion Section of the Florida Erosion Control Handbook. 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**

**Barrier Height.** The designed minimum height of barriers for this purpose is 0.5 feet during those periods when growing crops are susceptible to damage by blowing wind or wind-borne soil particles.

**Barrier Porosity.** The designed porosity for this purpose is 40-50 percent during the period when growing crops are to be protected.

**Barrier Direction and Spacing.** Measure the spacing between barriers along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles. The spacing is not to exceed 10 times the expected height of the barrier plus additional width permitted by the crop tolerance to damage from wind erosion\* as specified in the Florida Erosion Control Handbook, other accepted technical references, or other planned crop protection objective.

\*Crop tolerance to damage from wind erosion is the maximum soil erosion that a growing crop can tolerate, from crop emergence to field stabilization, without an economic loss to crop stand, crop yield or crop quality.

To determine the spacing between barriers use the current wind erosion prediction technology to estimate wind erosion during specific crop growth

stages. Table 14 in the Wind Erosion Section of the Florida Erosion Control Handbook contains crop tolerances to wind erosion. Calculations shall account for the effects of other practices in the conservation management system.

#### **Additional Criteria To Provide Food and Cover For Wildlife**

**Vegetation.** Barriers are often designed to enhance wildlife habitat in conjunction with one of the other purposes. Select barrier species that are adapted to the site and that meet the intended needs of the targeted wildlife species.

#### **CONSIDERATIONS**

Transport of wind-borne sediment and sediment-borne contaminants offsite are reduced by this practice when used in a resource 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 may 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.

Certain plants may be alternate hosts for pests injurious to adjacent crops and may not be satisfactory for use in barriers. Consider plants that serve as a home for beneficial, pest-eating insects, pollinators and pest predators. Consider planning barriers as trap strips to attract undesirable insects such as virus spreading aphids.

Selection of plant species less palatable to animals may reduce damage to barriers from grazing wildlife.

When barriers are designed to enhance wildlife habitat, plant species diversity should be encouraged. Barriers that result in multiple structural levels of vegetation within the barrier will maximize wildlife use.

If the barrier is also designed to provide escape or nesting cover for wildlife, locate barriers where they connect areas of existing perennial vegetation

whenever possible and include plants that will have a minimum expected height that provides adequate cover for the targeted species.

Encourage the use of adapted native plant materials whenever possible.

Consider using species of plants that sequester more carbon and/or increasing the width of the herbaceous barrier to improve carbon sequestration.

#### **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 & Maintenance described in this standard.

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

#### **OPERATION AND MAINTENANCE**

Re-establish annual barriers each year by planting at recommended dates, leaving rows standing and maintained throughout the critical period for which the barrier was designed.

Gaps in perennial barriers shall be replanted as soon as practical to maintain barrier effectiveness.

Fertilize perennial barriers as needed. Control weeds by cultivation, spot treatment when using chemicals, or other acceptable methods.

Remove wind-borne sediment in the barriers and distribute it over the surface of the field as determined appropriate.

Re-establish or relocate barriers as needed.

Barriers composed of perennial vegetation that are designed to enhance wildlife habitat should not be mowed unless their height or width exceeds that required to achieve the barrier purpose, or they become competitive with the adjoining landuse. Mowing should be done in the non-nesting season.

Prescribed burning to enhance plant vigor may be completed after nesting/resting periods. See Florida NRCS Conservation Practice Standard, Prescribed Burning, Code 338, for further guidance.

## REFERENCES

Florida Erosion Control Handbook

NRCS Technical Notes – Plant Materials

UF/IFAS - Agronomy Guides,  
<http://edis.ifas.ufl.edu/deplist.html>

National Agronomy Manual, 3<sup>rd</sup> Ed., October 2002

Florida NRCS Conservation Practice Standards  
Nutrient Management, Code 590  
Pest Management, Code 595  
Prescribed Burning, Code 338

General Manual – Titles 190, 420, and 450

National Planning Procedures Handbook

National Cultural Resources Procedures  
Handbook

National Environmental Compliance Handbook