

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**FIELD BORDER**

(Ft.)

CODE 386

**DEFINITION**

A strip of permanent vegetation established at the edge or around the perimeter of a field.

**PURPOSE**

- Reduce erosion from wind and water
- Soil and water quality protection
- Management of harmful insect populations
- Provide wildlife food and cover
- Increase carbon storage in biomass and soils.
- Improve air quality

**CONDITIONS WHERE PRACTICE APPLIES**

This practice is applied around the perimeter of fields. Its use can support or connect other buffer practices within and between fields. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown.

***This standard shall not apply where heavy concentrated flows are anticipated, where water quality is the primary resource concern, or along the edge of a row crop field which will be used to receive and convey surface runoff. Refer to the West Virginia Conservation Practice Standards (412) Grassed Waterway or (393) Filter Strip or other practices as applicable.***

**CRITERIA**

**General Criteria Applicable to All Purposes**

Field borders shall be established around the field edges to the extent needed to meet the

resource needs and producer objectives.

***Field borders may be established by planting or in some instances natural regeneration depending on objectives and resource concerns.***

Plants selected for field borders will have the physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

The field borders shall be established to adapted species of permanent grasses, legumes and/or shrubs. ***Where feasible, native plant species shall be used. No variety of tall fescue or reed canarygrass shall be used in conjunction with this standard.***

***Field border widths shall be a minimum of 20 feet for all purposes including native pollinators. The width of field borders for terrestrial wildlife is 30 feet. These widths may be increased depending on the purpose(s) for installing the practice. Border width may also be increased above the minimum to accommodate machinery or turn rows. Border widths for all purposes in excess of the minimum shall be determined by the planner based on existing site conditions and the intended use.***

***Herbaceous species and seeding rates suitable for establishment in herbaceous field borders may be selected from those listed in the West Virginia Conservation Practice Standard (512) Forage and Biomass Planting or (342) Critical Area Planting the WV Wildlife Habitat Evaluation Technique (WVWHET) or the WV Pollinator Handbook. Other species may be suitable for various purposes. Contact the appropriate NRCS state staff specialist for information***

**concerning appropriate plant species for selected purposes.**

***Shrubs suitable for establishment in West Virginia for various purposes may be selected from those listed in the Tree and Shrub List of West Virginia (MOATSL) or the West Virginia Pollinator Handbook.***

***Plant materials, seedbed preparation, spacing, seeding rates, dates, depths, and planting methods will conform to the following standards as applicable:***

***(342) Critical Area Planting***

***(512) Forage and Biomass Planting***

***(612) Tree/Shrub Establishment***

***(490) Forest Site Preparation***

***(484) Mulching***

Ephemeral gullies and rills present in the planned border area will be eliminated as part of seedbed preparation. If present, ephemeral gullies and rills located immediately upslope from the planned border area need to be treated to ensure more of a sheet flow into the planned border area.

***Field borders shall be maintained in a condition to meet the landowner's objectives and the purpose for installing the practice. Herbaceous borders shall be mowed, or sprayed with a selective herbicide as necessary to control invasive woody vegetation unless otherwise indicated (i.e. pollinator concerns). Light disking may be used on sites with slopes less than or equal to 5% to manage sprouting of invasive woody vegetation.***

#### **Additional Criteria to Reduce Erosion from Wind and Water**

Field border establishment, in conjunction with other practices, will be timed so that the soil will be adequately protected during the critical erosion period(s).

The amount of surface and/or canopy cover needed from the field border shall be determined using current approved water and wind erosion prediction technology. Calculations shall account for the effects of other practices in the management system.

Locate borders around entire perimeter of the field, or as a minimum, install borders to eliminate sloping end rows, headlands, and other areas where water flows will enter or exit the field.

Orient plant rows as closely as possible to perpendicular to sheet flow direction.

***Vegetation selected should be stiff-stemmed, upright and vigorous under expected conditions. Select from those species listed in the West Virginia Conservation Practice Standards (342) Critical Area Planting or (512) Forage and Biomass Planting or other species as recommended by NRCS state staff technical specialists.***

***Tillage and planting of annual row crops up and down the slope at the ends of contours is not recommended. For slopes equal to or greater than 5 percent, field borders may be established if the field is planted on the contour and tilled row crops are included in a rotation. In other instances, refer to the West Virginia Conservation Practice Standard (393) Filter Strip or other conservation practices as applicable***

#### **Additional Criteria to Protect Soil and Water Quality**

##### **Reducing Runoff and Increasing Infiltration.**

Locate borders around entire perimeter of the field, or as a minimum, install borders to eliminate sloping end rows, headlands and other areas where concentrated water flows will enter or exit the field.

***Vegetation selected should have fibrous, deep roots to facilitate infiltration rates. Select from those species listed in West Virginia Conservation Practice Standards (342) Critical Area Planting or (512) Forage and Biomass Planting or other species as recommended by State Technical Specialists.***

***Maintaining Field Setback Distances for Manure and Chemical Applications. Field borders will be designed to conform to minimum field application setback widths established by pesticide labels, state or local regulations; or 20 feet, whichever is greater.***

***Setback distances for manure or pesticide applications may be a combination of annually planted crops, forage crops and/or permanent vegetation established through planting or natural regeneration.***

**Water Quality – Adsorbed, Dissolved and Suspended Contaminants.** As a minimum, locate field borders along the edge(s) of the field where runoff enters or leaves the field. The minimum width for this purpose shall be 30 feet and have a vegetation stem density/retardance of moderate to high (e.g. equivalent to a good stand of wheat).

Design border widths to comply with all applicable State and local regulations regarding manure and chemical application setbacks.

**Reducing Runoff and Increasing Infiltration.** Locate borders around the perimeter of the field, or as a minimum, install borders to eliminate sloping end rows, headlands and other areas where concentrated water flows will enter or exit the field.

***On slopes equal to, or less than 5 percent, establish a narrow strip of grass and/or legumes at the crop field/border interface to increase trapping efficiency. The width of this strip will be in addition to the minimum 20 feet required.***

***Vegetation selected should have stiff upright stems and have the density required to perform the intended function.***

***Select suitable vegetation from those species listed in West Virginia Conservation Practice Standards (342) Critical Area Planting or (512) Forage and Biomass Planting or other species as recommended by NRCS state staff technical specialists.***

**Reducing Soil Compaction from Equipment Parking and Traffic.** Border widths will be designed to accommodate equipment parking, loading/unloading equipment, grain harvest operations, etc.

***Vegetation selected shall be tolerant of these conditions. Select from those species listed in the West Virginia Conservation Practice Standards (342) Critical Area Planting or (512) Forage and Biomass Planting or other species as recommended by NRCS state staff technical specialists.***

### **Additional Criteria to Increase Carbon Storage**

Establish “**fast growing**” plant species that will produce the greatest above and below ground biomass for the site. ***Increasing the width of the field border will increase the potential for carbon sequestration.***

Maximize the width and length of the herbaceous border to fit the site and increase total biomass production.

Do not burn if the main goal of the field border is carbon storage.

Do not disturb the roots of the established vegetation with tillage.

***One-third to one-half of the entire stand may be harvested annually after the nesting season (March 15 – July 15) to remove biomass.***

***Select from those species listed in West Virginia Conservation Practice Standards (342) Critical Area Planting, (512) Forage and Biomass Planting, (612) Tree/Shrub Establishment or other species as recommended by NRCS state staff specialists.***

### **Additional Criteria to Improve Air Quality**

Establish plant species with morphological characteristics that optimize interception and adhesion of airborne particulates. Select plants with persistent roots and residue that stabilize soil aggregates and capture airborne soil particles.

Establish species resistant to damage from equipment traffic.

### **Additional Criteria to Provide a Habitat to Cause Pests to Congregate.**

Select plants for the field border that attract pests (e.g. alfalfa strips planted to lure lygus bugs away from a cotton crop).

### **Additional Criteria to Improve Air Quality**

Establish plant species with foliar and structural characteristics that optimize interception, adsorption and absorption of airborne particulates.

Orient shrub rows as closely as possible to perpendicular to the prevailing wind direction during the period of concern.

**Refer to West Virginia Conservation Practice Standard (380) Windbreak/Shelterbelt for information regarding this purpose.**

**Species suitable for this purpose may be selected from the Tree and Shrub List suitable for Establishment West Virginia (MOATSL) in the West Virginia Conservation Practice Standards (612) Tree/Shrub Establishment or other species as recommended by State Technical Specialists.**

#### **Additional Criteria to Provide Wildlife Food and Cover**

Establish plant species that provide wildlife food and cover for the target wildlife species and/or pollinator habitat.

**Habitat requirements for terrestrial wildlife and important plant species may be found in the West Virginia Wildlife Habitat Evaluation Technique (WVWHET).**

**For pollinator habitat refer to the plant species and habitat assessments located in the West Virginia Pollinator Handbook.**

Vegetative successional state shall be maintained to accommodate target wildlife species requirements.

When wildlife and/or pollinators are a concern, a lower percent groundcover than would be needed if protecting soil and water quality was the only goal is acceptable as long as the soil resource concern is also adequately addressed (i.e. no excessive soil loss). This may be achieved by simply increasing the field border width.

**The ideal border should appear unkempt and be composed of a variety of plant species including forbs, grasses, legumes and possibly some shrubs.**

**Where erosion is not a concern, an effective wildlife border may be established by natural regeneration. This process is somewhat slower than planting and the land user has less control over plant species selection. Natural regeneration may encourage a**

**greater diversity of annual and perennial plants and better structural cover for wildlife species. This technique should only be attempted where noxious weeds will not dramatically interfere with the intended community.**

Schedule mowing, harvest, and weed control activities within the field border to accommodate reproduction and other life cycle requirements of target wildlife species.

**Sites that contain dense tall fescue sods or reed canarygrass stands may need to be renovated or eradicated prior to the establishment of more beneficial species. Refer to the West Virginia Conservation Practice Standard (490) Forest Site Preparation or other appropriate standards for removal methods.**

#### **Herbaceous Field Borders**

**The minimum width for herbaceous field borders where terrestrial wildlife is the primary purpose shall be 30 feet and should attain a height of 3-6 feet. It should be comprised of planted species as well as volunteer vegetation**

**In cropland settings, leaving 30 feet of standing crops may achieve an herbaceous wildlife field border purpose and provide supplemental food sources during winter months.**

**In most instances, planting along with volunteer species provide the optimum wildlife habitat. However, infestations of Johnsongrass and other non-beneficial plants should be controlled. Consult the WVU Extension Service for acceptable chemical control methods for noxious and invasive plants.**

**Periodic disturbance of field borders is necessary to stimulate growth of desirable vegetation and to eliminate encroachment of undesirable vegetation. As a rule of thumb, disturbance should occur within a field border every 3-5 years.**

**Not more than 50% of the entire field border habitat should be disturbed in any one year. In addition, never disturb the entire field border habitat around a single field in the same year.**

*Delay harvesting, mowing, disking or other disturbance of the area until after the primary nesting season (March 15 – July 15). When managing field borders for wildlife, disturb no more than 50 percent of the borders surrounding a field in any one year.*

#### **Cutback Borders for Terrestrial Wildlife**

*Cutback borders are a minimum of 30 feet wide and extend along as much of the field edge as possible.*

*The width of the border is not required to be uniform throughout its length and may be increased depending on management goals and objectives. Generally, the wider the area the better the habitat it can provide. Narrow borders are susceptible to heavy predation on animals that inhabit these areas.*

*Cut back borders may be established at different times and locations throughout the property; or a portion of a field's edge may be established each year to provide various stages of regrowth.*

*Where existing herbaceous field borders occur along woodland edges, they may be widened and enhanced by cutting woodland edges back to encourage growth of shrubs and other plants. This method may be effective within forested areas adjacent to permanent food plots, logging roads and landings or similar woodland settings.*

*Leaving cut slash and woody material on the ground or creating brush piles from the slash, may provide additional wildlife cover and deter browsing of new sprouts.*

*Trees or shrubs that provide a special source of food or cover may be left standing within the border during establishment. For example, species such as dogwoods, conifers, certain oaks, viburnums and serviceberry are examples of species that may be retained.*

*Shrubby vegetation may also be planted within and along cut-back borders which may serve to supplement existing species and provide a specialized food or cover type (e.g. a conifer planting for winter cover).*

#### **Planted Woody Borders for Terrestrial Wildlife**

*Borders may be established by planting to decrease the abruptness of edges and provides a smooth transition between the shorter vegetation and the adjacent woody cover.*

*This method may be useful in situations where cutback borders are not feasible or where particular concerns for aesthetics are needed.*

*A 30 foot minimum width consisting of at least two species and two rows shall be used for planted woody borders.*

*Suitable shrubs and small trees may be selected from Appendix 1 of the West Virginia Conservation Practice Standard (612) Tree/Shrub Establishment or other species as recommended by State Technical Specialists.*

#### **Field Borders for Pollinators**

*Field borders established for the primary purpose of providing forage for native pollinators shall be a minimum of 20 feet wide.*

*The width of the border may need to be increased to protect the area if a portion of the field border will be used for equipment movement or turn rows in crop fields. In this case, the field border width should be sufficient to allow a minimum of 10 feet of undisturbed habitat.*

*Planted species shall consist of a minimum of ten species including one native grass or sedge species; and at least three species in each of the bloom periods very early or early, mid and late season as defined in the West Virginia Pollinator Handbook (WVPH).*

*Sites that contain dense tall fescue sods may need to be renovated prior to re-establishment to more wildlife friendly species. Refer to (490) Tree/Shrub Site Preparation or other appropriate standard.*

*If utilized adjacent to cropland, the pollinator plant species selected shall provide supplemental forage during and outside the bloom period of the adjacent crop.*

**Planted borders shall consist of a minimum of ten species including one native grass; at least three species that bloom very early or early season; three mid season and three late season species. Refer to the WVPH for a list of native species and their blooming periods for West Virginia.**

**Species suitable for establishment shall include those listed in the WVPH. Other species may be suitable for pollinator habitat. Contact an appropriate state technical specialist or plant materials center specialist for information regarding the use of other species.**

**Pesticide use shall be minimized in field borders established for pollinators. If required they shall be applied with the least disturbance, most direct methods and/or during periods when pollinators are the least active (dusk or night).**

**Delay harvesting, mowing, disking or other disturbance of the area until after the nesting season for ground-nesting birds and other animals.**

**No more than 50 percent of the field borders surrounding a field shall be disturbed in any one year to maintain a supply of forage for native pollinators.**

## CONSIDERATIONS

Field borders are more effective and provide more environmental benefits when planted around the entire field.

**Consider the aspect, shade tolerance, soils, topography and climate when selecting plant materials for establishment.**

**Consider the potential loss of economic productivity of the area by installing field borders.**

**Consider the length of the establishment period, deer browse and feasibility of establishment for certain grasses and shrubs.**

Consider the aesthetics around the field edge.

**Consider airborne dust and particulate matter caused by equipment in travel areas.**

Consider the use of field borders to comply with required field setback distances applicable to manure and chemical applications.

Consider the use of native species when feasible to meet producer objectives.

**Consider overseeding an existing grass border with legumes for plant diversity and wildlife benefits.**

**Consider the use of additional water control structures needed to breakup or redirect concentrated water flows within the borders.**

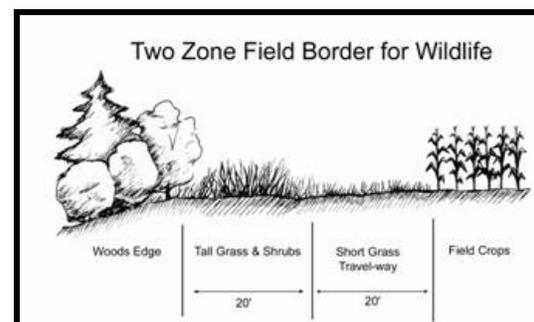
Consider plants tolerant to sediment deposition and any chemicals planned for application.

Consider using (380) Windbreak/Shelterbelt, adjacent to, or in conjunction with, field borders to enhance the ability to harbor beneficial insects and provide additional wildlife benefits.

**Consider connectivity of habitats and the locations of other buffer practices during practice layout.**

**Where wildlife is a purpose, consider maximizing widths to minimize predation and enhance habitat.**

**Consider the use of two different zones within a field border to maximize the habitat and diversity. The zone closest to the field is subject to greater disturbance from farm equipment, while the outside zone is protected from frequent disturbance (refer to Figure 1).**



**Figure 1.** Two-zone field borders may be used to decrease the abruptness of edges and provide a smooth transition between the shorter vegetation and adjacent woody cover.

**Consider the use of other buffer and erosion control practices where concentrated flow or**

*excessive erosion may occur in lieu of field borders.*

*Consider associated insect, pest, and disease problems when selecting plant and shrub species (i.e. cedar-apple rust, etc.)*

*Consider using this practice alone or in combination with other practices to create a minimum pollinator enhancement of at least one-half acre.*

## **PLANS AND SPECIFICATIONS**

Plans and specifications are to be prepared for the practice site. The following items should be specified (as applicable):

- *Purpose(s) of the buffer*
- *Border widths, lengths and total acreage*
- *Location within the field or farm boundary and average slope of the site*
- *Species of vegetation to be planted, targeted through natural regeneration or identified to be retained in the border (i.e. cutback borders)*
- *Planting dates and method*
- *Necessary site preparation*
- *Any supplemental nutrients required to establish or maintain the border*
- *CPA-52 or similar environmental documentation*

## **OPERATION AND MAINTENANCE**

Field borders require careful management and maintenance for performance and longevity.

Operation and maintenance requirements shall be included as appropriate including:

- *Management methods*
- *Amounts*
- *Timing*
- *Intensities*
- *Location*

*Inspect periodically especially after storm events and repair damage as required by reshaping and/or reseeding.*

*Remove sediment and repair or replace field borders when 4-6 inches of sediment have accumulated at the field border/cropland interface.*

*In cropland settings, shut off sprayers and raise tillage equipment to avoid damage to field borders.*

*Repair, shape and reseed border areas damaged by chemicals, tillage or equipment traffic as needed.*

*Ephemeral gullies and rills that develop in the border shall be filled smoothed and reseeded.*

*Control noxious weeds that interfere with the intended function of the buffer. Approved herbicides should be applied according to their label directions and precautions. Contact the WVU Extension Service for suitable herbicide recommendations.*

Apply periodic fertilization according to soil test recommendations to maintain desired vigor and growth. **NOTE: In some instances, fertilization may increase the density of the stand making it unsuitable for certain target species (i.e. bobwhite quail, pollinators, etc.).**

*Maintain herbaceous vegetation so that it provides at least 90% ground cover throughout the year except where there is no erosion concern and/or the specified purpose is to meet a particular wildlife habitat need.*

*Maintenance shall be scheduled to accommodate wildlife needs and other special requirements where feasible. For all purposes, delay maintenance, harvesting, weed control, mowing, disking or other disturbance of the area until after the primary nesting season (March 15 – July 15).*

*Maintenance of field borders where wildlife is a concern, should be scheduled so that not more than 50 percent of the entire field border habitat is disturbed, replaced or reseeded in any one year. In addition, never*

***disturb the entire field border habitat around a single field in the same year.***

***When planting allow enough time for establishment prior to harvest or disturbance; and exclude livestock during the establishment period and critical nesting timeframes (March 15 – July 15).***

***In planted woody borders undesirable vegetation should be removed at least every 3-5 years.***

***For cutback borders, when the trees and shrubs in at least 50 percent of the border exceed 15 feet in height, the cutting and removal process should be repeated.***

#### **REFERENCES**

Giles, Robert H., Jr., *Wildlife Management Techniques*, (prepared by the Wildlife Techniques Manual Committee), TWS., 3<sup>rd</sup> Edition., Washington, DC., 1971

***\*Bold italics is information added to the national standard by West Virginia***