

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**FIELD BORDER**

(Ac.)

**CODE 386**

**DEFINITION**

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

**PURPOSE**

This practice may be applied to accomplish one or more of the following:

- Reduce erosion from water
- Protect soil and water quality
- Manage pest populations
- Provide wildlife food and cover and pollinator habitat
- Increase carbon storage
- 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.

**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. The minimum field border width shall be 30 feet.

The field borders shall be established to adapted species of permanent grass, legumes and/or shrubs that accomplish the design objective and do not function as host for diseases of the field crop.

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. Species selected for the field border will be consistent with Conservation Cover Seeding Requirements - Technical Guide Reference No. 122 found in the Pennsylvania Field Office Technical Guide.

Seedbed preparation, seeding rates, dates, depths, fertility requirements, and planting methods will be consistent with guidance provided in the current Penn State Agronomy Guide, Penn State Agronomy Fact Sheets, the PA Field Office Technical Guide or other approved local references.

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.

**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).

Establish stiff-stemmed, upright grasses, grass/legumes or forbs to trap water-borne soil particles.

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

**Water Erosion Reduction.** Locate borders to eliminate sloping end rows, headlands, and other areas where concentrated water flows will enter or exit the field.

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

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

Do not burn the field border if the main goal of the field border is to protect soil or water quality.

**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.

**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 35 feet and have a vegetation stem density/retardance of moderate to high (e.g. equivalent to a good stand of wheat).

**Reducing Soil Compaction from Equipment Parking and Traffic.**

Border widths will be designed to accommodate equipment turning, parking, loading/unloading equipment, grain harvest operations, etc.

**Additional Criteria to Manage Pest Populations**

**Provide a Harbor for Beneficial Organisms (e.g. insects, mites, etc.).**

Include appropriate plants that attract beneficial organisms that prey on target pests.

Mowing, harvesting, pesticide applications and other disturbance activities will be scheduled to accommodate life cycle requirements of the beneficial organisms.

**Provide a Habitat to Cause Pests to Congregate.**

Select plants for the field border that attract pests away from crops.

**Additional Criteria to Provide Wildlife Food and Cover and Pollinator Habitat**

Select mixes consistent with Conservation Cover Seeding Requirements Technical Guide Reference No. 122. Neither Tall fescue nor Reed canary grass shall be used in field borders for wildlife habitat.

Field borders for wildlife habitat should only be mowed infrequently (once every third year or less frequent). When mowing does occur, it will

only occur between February 15<sup>th</sup> and March 31<sup>st</sup> or between August 1st and August 31<sup>st</sup>.

When wildlife and/or pollinators are a purpose, 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.

Protect field borders from grazing and unintentional fires.

**Additional Criteria to Increase Carbon Storage**

Establish plant species that will produce adequate above- and below-ground biomass for the site (i.e. a positive soil conditioning index).

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.

**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.

**CONSIDERATIONS**

Consider planting field borders around the entire field, not just on the field edges where water enters or leaves the field, for maximizing multiple resource protection.

Establishing a narrow strip of stiff-stemmed upright grass at the crop/field border interface can increase soil particle trapping efficiency of the field border.

Native plants are best suited for wildlife and pollinator habitat enhancement and provide other ecological benefits where adapted to site conditions and when consistent with producer objectives.

Include native plants that provide diverse pollen and nectar sources to encourage local pollinator populations.

Use field borders as corridors to connect existing or planned habitat blocks.

Prescribed burning, strip disking, or selective herbicide applications are management tools that can be used to maintain suitable habitat for specifically desired wildlife species.

Overseed the field border with legumes for increased plant diversity, soil quality, pollinators, and wildlife benefits.

Water bars or berms may be needed to breakup or redirect concentrated water flow within the borders.

In selecting plant species to establish in the field border, among other items, consider the plant's tolerance to:

- Sediment deposition and chemicals planned for application
- Drought in arid areas or where evapotranspiration can potentially exceed precipitation during the field border's active growing period(s).
- Equipment traffic.

Design border widths to match the required field application setback widths for easier management (i.e. land-use and management changes occur in the same location).

Establish plant species that will have the desired visual effects and that will not interfere with field operations or field border maintenance.

Consider the amount of shading that the field border or portions of the field border may experience and select species for those locations accordingly.

The use of native perennial plant species as opposed to annual species provides a longer period of resource protection.

Consider installing a contour buffer system, No Till practice or other conservation practices on adjacent upland areas to reduce surface runoff and excessive sedimentation of field borders.

#### **PLANS AND SPECIFICATIONS**

Prepare plans and specifications for each field or treatment unit according to the Criteria

included in this Standard. Specifications shall describe the requirements for applying this practice to meet the intended purpose. Record practice specifications on the Field Border 386, Conservation Practice Job Sheet. The following components shall be included for recording this specification:

- Field Border widths and lengths based on local design criteria.
- Field Border location(s) within the field(s) or farm boundary.
- Species to be used and the location and planting density of the species used.
- Site preparation requirements.
- Timing of planting and planting method.
- Liming or fertilizer requirements.
- Operation and maintenance requirements.

#### **OPERATION AND MAINTENANCE**

Field borders require careful management and maintenance for performance and longevity. The following O&M activities will be planned and applied as needed:

- Repair storm damage.
- Remove sediment from above or within the field border when accumulated sediment either alters the function of the field border or threatens the degradation of the planted species' survival.
- Shut off sprayers and raise tillage equipment to avoid damage to field borders.
- Shape and reseed border areas damaged by animals, chemicals, tillage, or equipment traffic.
- Maintain desired vegetative communities and plant vigor by liming, fertilizing, mowing, disking, or burning and controlling noxious weeds to sustain effectiveness of the border.
- Repair and reseed ephemeral gullies and rills that develop in the border.
- Minimally invasive tillage (e.g. paraplowing) may be performed in rare cases where compaction and vehicle traffic have degraded the field border function. The purpose of the tillage is strictly to

decrease bulk density and increase infiltration rates so as to provide a better media for reestablishment of vegetation and field border function.

- Maintenance activities that result in disturbance of vegetation should not be conducted during the nesting season of grass nesting birds.
- Avoid vehicle traffic when soil moisture conditions are saturated.

#### REFERENCES

Conservation Cover Seeding Requirements - Technical Guide Reference No. 122 found in the Pennsylvania Field Office Technical Guide.

K. G. Renard, G. R. Foster, G. A. Weesies, K. D. K. McCool and D. C. Yoder. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE), Agricultural Handbook Number 703.

Revised Universal Soil Loss Equation Ver.2 website (checked November 2011): [http://fargo.nserl.purdue.edu/rusle2\\_dataweb/RUSLE2\\_Index.htm](http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm).