



## NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

### FIELD BORDER

#### CODE 386 (AC.)

#### DEFINITION

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

#### PURPOSES

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

- Reduce erosion from wind and water – Resource Concern (SOIL EROSION - Sheet, rill, & wind erosion)
- Protect soil and water quality – Resource Concerns (SOIL QUALITY DEGRADATION – Compaction and WATER QUALITY DEGRADATION – Excess nutrients in surface and ground waters)
- Provide wildlife food and cover and pollinator or other beneficial organism habitat – Resource Concern (INADEQUATE HABITAT FOR FISH AND WILDLIFE – Habitat degradation)
- Increase carbon storage – Resource Concern (SOIL QUALITY DEGRADATION – Organic matter depletion)
- Improve air quality – Resource Concern (AIR QUALITY IMPACTS - Emissions of Particulate Matter - PM - and PM Precursors)

#### CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland and grazing lands located around the inside perimeter of fields to support or connect other buffer practices within and between fields.

#### CRITERIA

##### **General Criteria Applicable to All Purposes**

##### **Extent**

Field borders will be established around the inside perimeter field edges to the extent necessary to address the identified resource protection needs and producer objectives.

All field borders shall be at least 20 feet wide and will be sized to accommodate the travel and turning needs of the current farm equipment. Minimum field border widths shall be based on local design criteria specific to the purpose for installing the practice.

Plant species, seedbed preparation, seeding rates, dates, depths, and planting methods will be consistent with Wisconsin NRCS Conservation Practice Standard (WI NRCS CPS) 342, Critical Area Planting, or 327, Conservation Cover. Refer to NRCS Wisconsin Agronomy Technical Note 5 (TN-5), Establishing and Maintaining Native Grasses, Forbs and Legumes, and NRCS Wisconsin Agronomy Technical Note 6 (TN-6), Establishing and Maintaining Introduced Grasses and Legumes, for specific details. Use Biology Technical Note 8 (TN-8) for specific pollinator habitat information.

Select grass/forb/legumes species that are persistent throughout the year, stiff-stemmed and having upright growth characteristics to trap wind and waterborne soil particles.

Field borders may be established by leaving appropriate areas of existing pasture or hay land vegetation when rotating to row crops where the existing cover is sufficient to control erosion.

### **Concentrated Flow Channels**

Ephemeral gullies and rills present in the planned border area will be eliminated during seedbed preparation.

Ephemeral gullies and rills located immediately upslope from the planned border area shall be treated to ensure more of a sheet flow into the planned border area.

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

The amount of surface or canopy cover needed from the field border shall be determined using the current water and wind erosion prediction tools. Soil erosion estimates will account for all practices in the managed system.

### **Water Erosion Reduction**

Install borders to protect sloping end rows, headlands, and other areas where concentrated water flows will enter or exit the perimeter or edge of a field. Orient plant rows as closely as possible, perpendicular to sheet flow direction.

If these areas are mowed or harvested for hay, the last cutting will not be later than September 1st for native species and September 15th for introduced species, to allow sufficient time for the vegetation to recover prior to a killing frost.

The minimum height of grass, forbs or legumes shall be one foot during the critical erosion period (spring).

### **Wind Erosion Reduction**

Provide a stable area on the upwind edge of the field as determined by prevailing wind direction data.

Plant stiff-stemmed, upright grasses to trap saltating soil particles.

The minimum height of grass, forbs and legumes shall be one foot during the critical erosion period (spring).

Field borders shall not be burned.

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

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

- Install borders where they will slow or collect surface runoff in locations where runoff enter and exit the field edges.
- The minimum width for this purpose shall be 30 feet and have a vegetation stem density with a retardance of moderate to high (e.g. equivalent to a good stand of wheat).
- Field borders shall not be burned.
- Design widths must comply with all applicable state and local regulations relating to manure and chemical application setbacks. Refer to WI NRCS CPS 590, Nutrient Management.

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

- Border widths will be designed to accommodate equipment turning, parking, loading/unloading during planting and harvest operations. If cover is destroyed by this use, it shall be re-established.
- Field Borders shall not be used as a field road.

## **Additional Criteria to Provide Wildlife Food and Cover and Pollinator or other Beneficial Organism Habitat**

- The minimum width for this purpose shall be 30 feet.
- After establishment the entire field border shall not be mowed. Spot treatment is required for noxious weeds or invasive plants throughout the growing season. Mowing is allowed after August 1st and before September 1st for native species and before September 15th for an emerging weed problem.
- Mowing, harvesting, and pesticide applications shall be scheduled to accommodate life cycle requirements of pollinators and other beneficial organisms. Avoid unnecessary vehicle traffic in field border areas. Try to keep the cover at an optimum successional state for target wildlife species.
- For pollinator animals and other beneficial organisms that prey on target pests, select diverse plant species that meet dietary, nesting and cover requirements for the intended species. Refer to TN-5 and TN-6 for a list of approved plant species and Wisconsin Biology Technical Note 8 for a list of herbaceous and woody plants. Use WI NRCS CPS, 612, Tree Planting for pollinators and other beneficial organisms and targeted wildlife species.
- When wildlife or pollinators are a targeted concern, lower groundcover is allowed as long as soil erosion is controlled.
- Select species that provide adequate habitat food source and cover for the wildlife species of interest.

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

- Establish plant species that produce large amounts of above- and below-ground biomass to provide increase soil organic matter and improve soil quality.
- Maximize the length and width of herbaceous border to fit the site and increase total biomass.
- Field borders shall not be burned.
- The roots of established vegetation shall not be disturbed with any soil disturbing tillage operation.

### **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 mitigate the generation of airborne particulates.
- The field border shall not be burned when the objective is to improve air quality.
- Establish species resistant to damage from equipment traffic.

### **CONSIDERATIONS**

The following statements below are planning recommendations relating to the use of this practice:

#### **Considerations to enhance wildlife and/or pollinator value**

- Field borders can serve as corridors to connect existing and planned habitat blocks.
- To minimize wildlife mortality and habitat degradation, turn or drive machinery on field borders only when necessary, at low speed, and with implements fully raised.
- Consider over-seeding existing vegetation in the border with legumes for plant diversity and wildlife benefits.
- Rows of shrubs adjacent to field borders will often enhance the ability of the field borders to harbor beneficial insects, and may also provide additional wildlife benefits.
- When enhancement of wildlife habitat is a purpose, plantings that result in multiple structural levels of vegetation will maximize wildlife use.
- Overseed the forb content to increase plant diversity for pollinator and wildlife species.
- Native plants are best suited for wildlife and pollinator habitat enhancements. Use native plants if producer objectives allow it and site conditions are adapted. Include native plants that provide diverse pollen and nectar sources.
- To reduce nesting fatality, mow turn strips early to reduce nesting attractiveness.

#### **Considerations for organic production**

- Where genetic drift is a concern, use buffer vegetation to create a barrier between the pollen producing crop and the crop that must be protected or increase the distance between them so that cross-pollination is less likely.
- Organic producers may need to submit plans and specifications to their certifying agent for approval prior to installation of the field border, as part of the organic producer's Organic System Plan.

#### **Considerations for design criteria**

- Design border widths to comply with state and local regulations.
- To maximize multiple resource concerns, consider planting field borders around the entire perimeter of the field.
- To facilitate turning, consider sizing field borders at least 1.5 times as wide as the longest combination of farm equipment used on the field.
- To increase trapping efficiency, consider establishing a narrow strip of stiff-stemmed upright grass at the crop/field border interface.
- Diversions or waterways may be needed to break up or redirect concentrated water flows within the borders.
- Consider plants tolerant to sediment deposition and chemicals planned for application.
- Consider potential shading issues and plan species for those locations accordingly.

- Consider installing contour buffers, strip cropping, reduced tillage, or other conservation practices on adjacent cropland to reduce excessive sedimentation of field borders.

## **PLANS AND SPECIFICATIONS**

Plans and specifications are to be prepared for the practice site. The following items should be recorded using the WI NRCS CPS Job Sheet 386, Field Borders:

- Field border widths and lengths based design criteria,
- field border location within the field or farm boundary,
- species to be used, and planting rate,
- site preparation,
- planting method and timing,
- liming or fertilizer requirements, and
- operation and maintenance requirements.

## **OPERATION AND MAINTENANCE**

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

The following will be planned and applied as needed:

- Repair storm damage areas.
- Remove sediment accumulations at the field border and cropland interface.
- Shut off sprayers and raise tillage equipment to avoid damage to field borders.
- Shape and reseed border areas damaged by chemicals, tillage, or equipment traffic.
- Fertilize, mow, harvest, and control noxious weeds to maintain plant vigor.
- Ephemeral gullies and rills that develop in the border will be filled and reseeded.
- Avoid vehicle traffic when soil moisture conditions are saturated.
- Avoid cover disturbance during nesting season.
- Do not use the field border as a hay yard or machinery parking lot for any extended period of time, especially if doing so will damage or impair the function of the field border.
- Maintain effectiveness of border by lining, fertilizing, mowing, disking and interseeding.
- Control noxious weeds.
- If compaction and vehicle traffic degrade field border, consider vertical tillage to increase infiltration prior to re-establishment. This shall be a rare occurrence.
- When managing for wildlife, maintenance activities that result in disturbance of vegetation should not be conducted during the primary nesting, fawning and calving seasons. Activities should be timed to allow for regrowth before the growing season ends whenever possible.
- Periodic removal of some products such as medicinal herbs, nuts, and fruits is permitted provided the conservation purpose is not compromised by the loss of vegetation or harvesting disturbance.
- Maintain records of the field border maintenance as needed by the land user.

## FEDERAL, TRIBAL, STATE, AND LOCAL LAWS

Users of this standard should be aware of potentially applicable federal, tribal, state and local laws, rules, regulations, or permit requirements governing field borders. This standard does not contain the text of federal, tribal, state, or local laws.

## REFERENCES

Baumgartner, J et. al. Biodiversity Conservation – An Organic Farmer’s Guide. 2005. Wild Farm Alliance. <http://www.wildfarmalliance.org>

Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, coordinators. 1997. Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE).U.S. Department of Agriculture, Agriculture Handbook 703.

Revised Universal Soil Loss Equation Version 2 (RUSLE2) web site: [http://fargo.nserl.purdue.edu/rusle2\\_dataweb/](http://fargo.nserl.purdue.edu/rusle2_dataweb/)

Sources of Organic and Untreated Non-GMO Seeds. National Sustainable Agriculture Information Service. <http://attra.ncat.org/sorg/seeds.html>

USDA, NRCS Wisconsin Field Office Technical Guide, Section IV, Conservation Practice Standards and Specifications.

USDA, NRCS Wisconsin Agronomy Technical Note 5, Establishing and Maintaining Native Grasses, Forbs and Legumes.

USDA, NRCS Wisconsin Agronomy Technical Note 6, Establishing and Maintaining Introduced Grasses and Legumes.

USDA, NRCS Wisconsin Biology Technical Note 8, Pollinator Biology and Habitat.

USDA, NRCS, Conservation Practice Job Sheet 386, Field Border.

USDA, NRCS, Wisconsin NRCS eFOTG Conservation Practice Standard Tree Planting (612).

USDA-AMS National Organic Program Regulations, 7 CFR Part 205. <http://www.ams.usda.gov/AMSV1.0/nop>

Wind Erosion Prediction System (WEPS) website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/>

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