



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.

PURPOSE

This practice is used to accomplish one or more of the following purposes—

- Reduce erosion from wind and water and reduce excessive sediment to surface waters (soil erosion)
- Reduce sedimentation offsite and protect water quality and nutrients in surface and ground waters (water quality degradation)
- Provide food and cover for wildlife and pollinators or other beneficial organisms (inadequate habitat for fish and wildlife)
- Reduce greenhouse gases and increase carbon storage (air quality impact)
- Reduce emissions of particulate matter (air quality impact)

CONDITIONS WHERE PRACTICE APPLIES

This practice is applied around the inside perimeter of fields. Its use can support or connect other buffer practices within and between fields. This practice applies to cropland and pasture fields.

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. Minimum field border widths shall be at least 20 feet wide or wider if necessary to turn farm equipment.

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.

Refer to standards and specifications for Range Planting (550) and Forage and Biomass Planting (512) for additional information on species selection.

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. For portions of the border that will be subject to equipment traffic, establish species tolerant to such traffic.

Seedbed preparation, dates, depths, fertility requirements, and planting methods will be consistent with information found within the Herbaceous Vegetation Design Procedures (550DP).

Seeding rates will be a minimum of 40 PLS/ft² unless the purpose and associated criteria require or allow for a different rate.

Ephemeral gullies and rills present in the planned border area will be shaped according to the Critical Area Planting (342) standard 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.

Break up or redirect concentrated water flow within the field borders to prevent gully erosion.

Additional Criteria to Reduce Erosion from Wind and Water and Reduce Excessive Sediment to Surface Waters

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 wind- or water- borne soil particles.

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.

Wind Erosion Reduction

Locate borders to provide a stable area on the windward edge of the field as determined by prevailing wind direction data.

Minimum height of grass or forbs shall be one foot during the critical erosion period.

Water Erosion Reduction

Locate borders to eliminate sloping end rows, headlands, and other areas where concentrated water flows will enter or exit the field or where high rates of water erosion are likely. Refer to Grassed Waterway (412) or Critical Area Planting (342) for additional information on species composition and seeding rates if severe sheet and rill, ephemeral or classic gully erosion is occurring.

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

Additional Criteria to Reduce Sedimentation and Protect Surface and Ground 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 on areas that are 5 percent or steeper, on flatter slopes if excessively long, headlands and other areas where concentrated water flows will enter or exit the field or where high rates of water erosion are likely.

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). Refer to Filter Strip (393) for additional information on species composition and seeding rates if field border will function as a filter strip.

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

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 Provide Food and Cover to Wildlife and Pollinators and Other Beneficial Organisms

Establish plant species that provide wildlife food and cover for the target wildlife species and/or pollinator habitat. Forbs and/or legumes must comprise a minimum of 20% (by PLS/ft²) within seed mixtures to provide benefits to a wider array of wildlife species. Field Borders intended for specific wildlife species may require even higher forb/legume composition. Refer to the Field Border – Upland Bird Habitat Design Procedures (386DP) or the Upland Wildlife Habitat Management – Upland Game Bird Habitat Design Procedures (645DP) for additional information.

Information regarding plantings to provide pollinator habitat can be found in the Upland Wildlife Habitat Management (645) standard.

Minimum average field border width for the purpose of wildlife habitat is 30 feet with no portion less than 20 feet wide.

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

Vegetative successional state shall be maintained to accommodate target wildlife species requirements. Refer to Early Successional Habitat Development/Management (647) for additional information.

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.

To meet the quality criteria requirements for wildlife habitat (food, water cover, etc.) in Section III of the FOTG, the planned system must provide a total rating of 0.5 or higher for the conservation treatment unit. Rating shall be recorded using the Cropland Habitat Evaluation Worksheet (NE-CPA-32). A species-specific habitat evaluation tool (i.e. Nebraska Conservation Planning Sheet 23 for Northern Bobwhite Quail) may also be used.

Refer to the Field Border – Upland Bird Habitat Design Procedures (386DP) for additional criteria to benefit quail and other upland game birds.

Additional Criteria to Reduce Greenhouse Gases and 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 Reduce Emissions of Particulate Matter

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.

Field borders provide may provide for hay production. Refer to Forage and Biomass Planting (512) and Forage Harvest Management (511) for additional guidance for this purpose.

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.

Waterbars 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).

The use of field borders may provide for buffer zones needed to meet organic crop production criteria.

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, Grass Seeding Job Sheet (NE-CPA-8), other appropriate job sheets, narrative statements in the conservation

plan, or other acceptable documentation. 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. paraploughing) 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. Conduct any pesticide spray operations in the production area in a manner that prevents exposure of the field border to the pesticides. 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.
- Avoid vehicle traffic when soil moisture conditions are saturated.

REFERENCES

Baumgartner, J. et al. Biodiversity Conservation – An Organic Farmer's Guide 2005. Wild Farm Alliance.

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 Version 2 (RUSLE2) website