

**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 wind and water
- Protect soil and water quality
- Manage pest populations
- Provide wildlife food and cover
- 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.

Minimum field border widths shall be based on local design criteria specific to the purpose or purposes for installing the practice.

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.

- Do not plant alfalfa near vegetable, strawberry, and flower crops, as it attracts the Tarnished Plant Bug.
- Do not plant wild brambles near berry crops to reduce sources of pests and diseases to the crop.
- Do not plant wild plum or cherries near potatoes to prevent transmission of fungal diseases.
- Do not use Currant and Gooseberry plants. (It is illegal to plant *Ribes* sp. in Maine, as they are carriers of White Pine Blister Rust.)

Do not use invasive plant species. A short list of such species includes: Japanese barberry, shrub honeysuckles, autumn and Russian olive, common and glossy buckthorns, and multiflora rose.

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

Seedbed preparation, seeding rates, dates, depths, fertility requirements, and planting methods will be consistent with appropriate NRCS standards, including Pasture and Hayland Planting (512), Critical Area Planting (342), Early Successional Habitat Development/Management (647), and

Tree/Shrub Establishment (612) depending upon the desired species mix for the site.

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 sheet flow into the planned border area.

Additional Criteria to Reduce Erosion from Wind and Water

Time field border establishment in conjunction with other practices, to ensure that the soil will be adequately protected during 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.

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

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. Design border widths 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. pollinators and insects, mites, etc. that are pest predators). Include appropriate plants that attract beneficial organisms that prey on target pests.

Schedule mowing, harvesting, pesticide applications and other disturbance activities to accommodate life cycle requirements of, and minimized affects to, beneficial organisms.

Provide a Habitat to Cause Pests to Congregate. If known, select plants for the field border that attract pests. The borders may then be treated to reduce pest populations.

Additional Criteria to Provide Wildlife Food and Cover

Establish plant species that provide wildlife food and cover for the target wildlife species. Refer to "Maine Biology Tech Note 1: Upland Wildlife Grass & Herbaceous Planting Recommendations for Maine."
http://efotg.nrcs.usda.gov/references/public/ME/NBH_ME_01.pdf

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. Avoid mowing between April 15th and August 1st.

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Maintain vegetative composition and structure to accommodate target wildlife species requirements. This criterion shall be consistent with Maine NRCS Early Successional Habitat Development/Management (647).

When wildlife is a purpose or concern, a lower percent groundcover is acceptable as long as the soil resource concern is also adequately addressed (i.e. no excessive soil loss).

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 habitat enhancement and provide other ecological benefits where adapted to site conditions and when consistent with producer objectives.

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

<http://www.nrcs.usda.gov/feature/pollinators.html>.

For more info on pest management and attracting beneficial organisms, see AATRA publication, "Farmscaping to Enhance Biological Control" <http://www.attra.org/attra-pub/farmscape.html>

Use plant species mixes to enhance biodiversity.

Add legumes for increased plant diversity, soil quality, and wildlife benefits.

Use mixes dominated by perennial species to increase persistence and effectiveness of the border. Use annuals sparingly or not at all.

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

Strip disking or selective herbicide applications are management tools that can be used to maintain suitable habitat for desired wildlife species.

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
- Chemical pest control
- Drought
- Equipment traffic.

Design border widths to match any required field application setback distances for manure, fertilizer, or pesticides.

Establish plant species that will have the desired visual effects and 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.

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 practice purpose and field management.
- 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.
- Utilize minimally invasive tillage (e.g. paraplowing, subsoiling) 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. (See Deep Tillage, NRS code 324.)
- Avoid maintenance activities that result in disturbance of vegetation during the nesting season of grass nesting birds.
- Avoid vehicle traffic when soil moisture conditions are saturated.

REFERENCES

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 (checked May 2007): http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm.