



**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 (resource concern)

- 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

Establish field borders at field edges to the extent needed to meet the resource needs and producer objectives. Design minimum field border widths based on local design criteria specific to the purpose or purposes for installing the practice.

Establish field borders to adapted species of permanent grass, forbs and/or shrubs that accomplish the design objective.

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. Establish traffic and compaction tolerant species for portions of the border that will be subject to equipment traffic.

Seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with approved local criteria and site conditions. Use NY NRCS approved seeding/planting references for species selection, seeding rates, timing, and planting methods.

Eliminate all ephemeral gullies and rills present in the planned border area as part of seedbed preparation. Treat all ephemeral gullies and rills located immediately upslope from the planned border area to ensure more sheet flow and less concentrated flow enters the field 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

Time field border establishment to protect the soil during the critical erosion period(s).

Establish permanent species that create a dense cover.

Establish stiff-stemmed, upright grasses, grass/legumes or forbs to trap wind or waterborne 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. Soil erosion estimates 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 during the critical erosion period(s).

Minimum height of grass or forbs shall be one foot during the critical wind erosion period. Use current approved wind erosion prediction technology to determine critical erosion periods and wind direction.

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 be perpendicular to sheet flow direction.

Additional Criteria to Reduce Sedimentation Offsite and Protect Water Quality and Excess Nutrients in Surface and Ground Waters

Do not burn the field border.

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 dense vegetative stand (similar to a dense sod).

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

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

Additional Criteria to Provide Wildlife Food and Cover and Pollinator or Other Beneficial Organisms

Use an approved habitat evaluation procedure to determine the appropriate amount, arrangement and composition of habitat resources needed to provide adequate food and cover for target wildlife species.

Select species that provide adequate habitat, food source and/or cover for the wildlife species of interest.

The minimum width for this purpose shall be 50 feet.

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

When possible, disturb no more than 1/3 of the field border at any given time. Avoid vehicle traffic in the field border area.

For beneficial organisms (e.g., predatory and parasitic insects, spiders, insectivorous birds and bats, raptors, and terrestrial rodent predators) that prey on target pests, select diverse plant species that meet dietary, nesting and cover requirements for the intended species, at least during the critical period for control of target pests, and ideally year-round. Avoid exposure of the field border to pesticides and other chemicals that are potentially harmful to wildlife, pollinators, and other beneficial organisms.

When wildlife and/or pollinators are a concern, a lower percent groundcover than would be needed if protecting soil and water quality is acceptable as long as the soil resource concern is also adequately addressed (i.e., no excessive soil loss). Increase the field border width as needed to meet the soil loss objectives when using reduced ground cover amounts.

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 will be achieved).

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

Do not burn the field border.

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 mitigate the generation of airborne particulates.

Do not burn the field border.

Establish species resistant to damage from equipment traffic.

CONSIDERATIONS

Applicable to All Purposes

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

For enhancement of wildlife habitat, consider extending minimum width of the field border. Wider borders provide better protection from predators, especially during the nesting period.

Plant field borders around the entire field, not just on the field edges where water enters or leaves the field, to maximize resource conservation benefits.

Establishing a narrow strip of stiff-stemmed upright grass at the crop/field border interface can increase soil particle and other airborne particulate 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.

When enhancement of wildlife habitat is a purpose, plant species diversity should be encouraged. Plantings that result in multiple structural levels of vegetation will maximize wildlife use.

Include native plants that provide diverse pollen and nectar sources to benefit local pollinator populations. Where possible, re-establish the native plant community for the site.

Over-seed the field border with forbs for increased plant diversity, soil quality, pollinators, and wildlife benefits.

In selecting plant species 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.

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

Establish plant species taking into account shading from adjacent vegetation.

Avoid species that may harbor pests and adversely affect nearby crops, plant communities, or species in the planting. Diversify species to avoid loss of function due to species-specific pests.

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

Conservation Practice Standards Prescribed Burning (Code 338), Prescribed Grazing (Code 528), and Early Successional Habitat Development and Management (Code 647) are management practices that can be used to maintain suitable habitat for specifically desired wildlife species, provided those practices are applied following specifications that do not compromise the purpose(s) of the practice.

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. If extensive turning/traffic will be necessary on the field border during the nesting season, reduce mortality by mowing prior to the start of the nesting season to reduce its attractiveness as a nesting site providing alternative nesting cover is available.

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).

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.

Organic producers may have to submit plans and specifications to their certifying agent for approval prior to installation, as part of the organic producer's organic system plan.

Where genetic drift is a concern, use buffer vegetation to create a barrier between the pollen-producing crop and the crop needing protection. Ensure adequate distance between crops so that cross-pollination is less likely.

Design border widths to accommodate equipment turning, parking, loading/unloading equipment, grain harvest operations, etc. to minimize soil compaction on the high-traffic field edges.

Use water bars or berms to breakup or redirect concentrated water flow within the field borders.

PLANS AND SPECIFICATIONS

Specifications shall be prepared for each site and purpose and recorded in the approved Implementation Requirements (IR) document.

- Practice purpose(s).
- Field border widths and lengths based on local design criteria.

- Field border location(s) delineated on a plan map within the field(s) or farm boundary.
- Species, location and planting density for plantings.
- Site preparation requirements including measure to control concentrated flow erosion.
- 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. Plan and apply the following O&M activities as needed:

- Repair damage from storm events.
- Remove sediment from above, within, and along the leading edge of the field border when accumulated sediment either alters the function of the field border or threatens the degradation of the planted species.
- Shut off pesticide/herbicide sprayers and raise tillage equipment to avoid damage to field borders.
- Shape and reseed border areas damaged by animals, chemicals, tillage, or equipment traffic.
- Do not use the field border as a hay storage 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 desired vegetative communities and plant vigor by liming, fertilizing, mowing, disking, or burning and controlling noxious and invasive weeds to sustain effectiveness of the border.
- Repair and reseed any ephemeral gullies and rills that develop in the border.
- Use very low disturbance vertical tillage (e.g., paraplowing) in rare cases where compaction and vehicle traffic have degraded the field border function. The purpose of the tillage is strictly to relieve soil compaction and increase infiltration rates so as to provide a better media for reestablishment of vegetation and field border function.
- When managing for wildlife, avoid maintenance activities that result in disturbance of vegetation during the primary nesting, fawning and calving seasons.
- Conduct pesticide spray operations in the production area in a manner that prevents exposure of the field border to pesticides to minimize impact to pollinator and other beneficial organism habitat. Account for the toxicity of the materials used to non-pest organisms, timing, and weather conditions when applying pesticides in the production area.
- Do not compromise the conservation purpose of this practice through loss of vegetation or harvesting disturbance if periodically removing products such as medicinal herbs, nuts, and fruits
- Time management activities to allow for regrowth before the growing season ends whenever possible to provide adequate cover for target wildlife species.
- Maintain the optimal vegetative successional state to accommodate target wildlife species' requirements.
- Avoid trafficking when soil moisture conditions are saturated.
- Maintain records of the field border maintenance.

REFERENCES

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

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.

USDA NRCS. 2012. A guide to conservation plantings on critical areas in the northeast. USDA, NRCS, Big Flats Plant Materials Center, Corning NY (<http://plant-materials.nrcs.usda.gov/nypmc/>)