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

Establish field borders at 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.

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

Seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with approved local criteria and site conditions.

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 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

Field border establishment will be timed so that the soil will be adequately protected 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.

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 for 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 30 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 30 feet.

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.

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). This may be achieved by simply increasing the field border width.

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.

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 encourage local pollinator populations. Where possible, re-establish the native plant community for the site.

Overseed 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.

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

NRCS 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, mortality may be reduced by mowing it early to reduce its attractiveness as a nesting site, if 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 that must be protected, or increase the distance between them so that cross-pollination is less likely.

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

Water bars or berms may be needed 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 document.

- Practice purpose(s).
- 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.

Note:

Record the specifications using the Texas Code 386 Practice Implementation Requirements document located in eFOTG Section IV – Conservation Practices – Field Border (Code 386) folder.

Locate the folder from the below link: eFOTG-Document Locator

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, 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 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 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 ephemeral gullies and rills that develop in the border.
- Minimally invasive vertical 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 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, maintenance activities that result in disturbance of vegetation should not be conducted during the primary nesting, fawning and calving seasons. In addition, when managing for wildlife, pollinator, and beneficial habitat, conduct any pesticide spray operations in the production area in a manner that prevents exposure of the field border to the pesticides, taking into account toxicity of the materials used to non-pest organisms, and weather conditions. Activities should be timed to allow for regrowth before the growing season ends whenever possible. The optimal vegetative successional state shall be maintained to accommodate target wildlife species' requirements.
- 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.
- Maintain records of the field border maintenance as needed by the land user.

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.

Revised Universal Soil Loss Equation Version 2 (RUSLE2) Web site (checked May 2007): http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm.