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 (Resource Concern: Soil erosion – Sheet, rill, & wind erosion).
- Protect soil and water quality (Resource concerns: Soil quality degradation – Compaction; 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 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 grazing lands.

CRITERIA

General Criteria Applicable to All Purposes

The extent and width of borders should address the resource concerns and planning objectives.

Use perennial grasses or forbs and/or shrubs to meet the objectives, and have the physical characteristics to control wind and water erosion in the field border area.

Do not use any noxious or invasive species.

Species must be adapted to local soil, ecological sites and climatic conditions, be easily established, long-lived, and manageable. Species must conform to the respective Major Land Resource Area (MLRA) eVegGuide in Section II of the Field Office Technical Guide.

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

Eliminate any ephemeral gullies and rills in the planned border area before vegetation establishment. If present, ephemeral gullies and rills located immediately upslope from the planned border area need to be treated to ensure sheet flow into the area.

Additional Criteria to Reduce Erosion from Wind and Water

Time the establishment of the field border and any associated practices to protect the area during the critical erosion period(s).

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

Determine the amount of surface and/or canopy cover needed from the field border by using current approved water and wind erosion prediction technology, being sure that the soil erosion estimates 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 during the critical erosion period(s).

Maintain a minimum grass and forb height of 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.

Water Quality – Adsorbed, Dissolved and Suspended Contaminants. Locate field borders along the edge(s) of the field where runoff enters or leaves the field. The minimum effective width is 30 feet and the vegetation stem density/retardance should be moderate to high (e.g. equivalent to a good stand of wheat).

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 borders to accommodate equipment turning, parking, loading/unloading equipment, grain harvest operations, etc.

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

Select species that provide adequate habitat, food source and/or cover for the wildlife species of interest. The minimum width is 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. Vehicle traffic should be avoided 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.

Maintain the optimal vegetative successional state to accommodate target wildlife species' requirements.

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 the field border.

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 mitigate the generation of airborne particulates.

Do not burn if the main goal of the field border is to improve air quality.

Establish species resistant to damage from equipment traffic.

CONSIDERATIONS

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

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 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.

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.

Use State-approved plant species that provide wildlife food and cover for the target wildlife species and/or pollinator habitat.

Field borders can serve as corridors to connect existing or planned habitat blocks.

Prescribed burning, prescribed grazing, strip disking, or selective herbicide applications are management tools that can be used to maintain suitable habitat for specifically desired wildlife species, provided that such management activities 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.

Overseed the field border with forbs 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 field borders.

In selecting plant species, 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).

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.

Additional Considerations for Organic Systems - 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.

PLANS AND SPECIFICATIONS

Prepare and record plans and specifications for each field or treatment unit according to the Criteria included in this Standard. Describe the requirements for applying this practice to meet the intended purpose(s). Include the following components:

- 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. Apply the following O&M activities 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 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.
- 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.
- Avoid vehicle traffic when soil is saturated.
- Maintain records of field border maintenance.

REFERENCES

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OMRI Organic Seeds Database. Organic Materials Review Institute. http://www.omri.org/seeds

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

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

USDA-AMS National Organic Program National List of Allowed and Prohibited Substances. http://www.ams.usda.gov/AMSv1.0/nop

USDA-AMS National Organic Program Regulations, 7 CFR Part 205. http://www.ams.usda.gov/AMSv1.0/nop