

**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.

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 species that are resistant to damage from equipment traffic or plan the location of sensitive species where equipment traffic is not anticipated.

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

The width of the border may be increased wider than the minimum width to accommodate larger machinery. Border widths for all purposes in excess of the minimum width shall be determined by the planner based on existing site conditions and the intended use.

Eliminate ephemeral gullies and rills present in the planned border area 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 a more diffuse sheet flow into the planned border area.

Maintain the field border in a condition to meet the owner's objectives and the purpose for installing the practice. Herbaceous borders shall be burned, mowed, or sprayed with a selective herbicide according to label requirements as needed to control invasive vegetation. Light disking may be used on non-erosive sites to manage vegetation.

Additional Criteria to Reduce Erosion from Wind and Water

The minimum width of a field border for this

purpose is 20 feet.

Use CRITICAL AREA PLANTING (342) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification to provide adequate cover. Select species to plant from Table 1 in the seeding specification.

Time field border establishment, in conjunction with other practices, to adequately protect the soil during the critical erosion period(s).

Establish stiff-stemmed, upright grasses, grass/legumes, forbs, and shrubs to trap wind- or water-borne soil particles. Follow TREE/SHRUB ESTABLISHMENT (612) practice standard when selecting and planting shrubs.

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 the prevailing wind direction.

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

Water Erosion Reduction. Locate borders around the entire 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.

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

Tillage and planting of annual row crops up and down the slope at the ends of contour rows is not recommended. For slopes equaling or exceeding 5 percent, establish field borders to eliminate end rows if the field is planted on the contour and tilled row crops are included in the rotation.

Additional Criteria to Protect Soil and Water Quality

The minimum width of a field border for this purpose is 30 feet.

Use CRITICAL AREA PLANTING (342) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification to provide adequate cover for this purpose. Select species to plant from Table 1 in the seeding specification that provide good to excellent ground cover during the entire year.

Do not burn the field border if a primary 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 plant cover for this purpose shall have a vegetation stem density/retardance of 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. These setback distances may be a combination of annually planted crops, forage crops, and/or permanent vegetation.

Reducing Soil Compaction from Equipment Parking and Traffic.

Border widths will be designed to accommodate equipment turning, temporary parking, loading/unloading equipment, and grain harvest operations only during the portion of the year that this use is needed for planting or harvesting crops.

Additional Criteria to Manage Pest Populations

The minimum width of a field border for this purpose is 20 feet.

Use PASTURE AND HAYLAND PLANTING (512) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification to provide adequate cover for this purpose. Select species to plant from Table 1 in the seeding specification that provide good to excellent insect habitat.

Provide a Harbor for Beneficial organisms (e.g. insects, mites, etc.). Include appropriate plant species in the seed mixture that attract beneficial organisms that prey on target pests.

Mowing, harvesting, pesticide applications, and other disturbance activities will be scheduled to accommodate life cycle requirements of the beneficial organisms.

Provide a Habitat to Cause Pests to Congregate. Establish trap strips of select plants for the field border that attract pests (e.g. alfalfa strips planted to lure lygus bugs away from a cotton crop).

Additional Criteria to Provide Wildlife Food and Cover

The minimum width of a border for this purpose is 30 feet.

Establish plant species that provide wildlife food and cover for the target wildlife species. Use UPLAND WILDLIFE HABITAT MANAGEMENT (645) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification to provide adequate plant structure and diversity for this purpose. The option for reduced seeding rates for wildlife plantings does not apply to field borders.

Erosion rates must remain within acceptable limits after treatment. Concentrated flow erosion must be controlled by proper treatment. If vegetation establishment alone will treat areas of concentrated flow, increase the seeding rate to stabilize a critical area – see CRITICAL AREA PLANTING (342) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification. Select wildlife friendly species with good to excellent erosion and wildlife ratings in Table 1 of the specification. Use these species in the wildlife mix to achieve adequate treatment of concentrated flow areas. If mechanical treatment is needed for concentrated flow areas, see GRASSED WATERWAY (412) or FILTER STRIP (393) practice standards.

Choose species that have a good to excellent wildlife rating and erosion control rating from Table 1 of VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification.

Promote diverse plant communities consisting of four or more species of grasses, forbs, and legumes.

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

If haying is a management decision for field borders, cut and remove vegetation between July 15 and August 15.

Do not use as an equipment or vehicle travel lane. Use of these borders for turning will be kept to a minimum during the avian nesting period from May 1 through July 15.

Vegetative successional state shall be maintained to accommodate target wildlife species requirements. Vegetative disturbance such as prescribed burning and light disking should occur no more than once every two years for the greatest wildlife benefit while maintaining the stand of vegetation. Disturb no more than one-third of the field border each year. Develop a site specific management plan for any disturbance activities to protect the desired wildlife species and control erosion.

When wildlife is a concern, a lower percentage of groundcover is acceptable as long as the soil resource concern is also adequately addressed (i.e. soil loss to tolerable levels). This may be achieved by simply increasing the field border width.

Where wildlife habitat development will occur on lands that do not have a potential erosion problem, an effective herbaceous stand may be established by natural regeneration. This process is slower than establishment by planting, and the land user has less control over plant species selection. Natural regeneration will encourage a greater diversity of annual and perennial plants along with better structural cover for wildlife. There is often an adequate seedbank in the soil for good “weedy” wildlife food and cover to develop. This technique should only be attempted when noxious weeds and undesirable invasive plants do not exist in the seedbank.

Additional Criteria to Increase Carbon Storage

The minimum width of a field border for this purpose is 30 feet.

Use CONSERVATION COVER (327) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification to provide adequate cover for this purpose.

Establish perennial 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

The minimum width of a field border for this purpose is 20 feet.

Use CONSERVATION COVER (327) practice standard and VEGETATION ESTABLISHMENT, HERBACEOUS SEEDING (723) specification to provide adequate cover for this purpose. Select species to plant from Table 1 in the seeding specification that provide good to excellent ground cover during the entire year.

Establish plant species with morphological characteristics that optimize interception and adhesion of airborne particulates. Select plants with persistent roots and residue that stabilize the soil resource and capture airborne soil particles.

Establish species resistant to damage from equipment traffic.

CONSIDERATIONS

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

Establish travel lanes, field roads, and hay or equipment storage areas separate from the

areas designated for field borders. Adequate vegetative growth is needed to meet the purposes of this conservation practice.

Establish a narrow strip of stiff-stemmed upright grass at the crop/field border interface to 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 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, and wildlife benefits.

When field erosion exceeds the T value or erosion is visible in the proposed border area, sites may require earth moving and shaping prior to seeding to stabilize the area.

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 excessively drained or shallow soils 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.

Evaluate 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.

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.
- 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.

- 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.
- Maintain desired vegetative communities and plant vigor by liming, fertilizing, mowing, disking, burning, and controlling noxious weeds to sustain effectiveness of the border.
- Repair and reseed ephemeral gullies and rills that develop in the border with species resistant to erosion.
- Minimally invasive 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 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.
- Avoid vehicle traffic when soil moisture conditions are saturated. Minimize vehicle traffic at all other times.

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:
http://fargo.nserl.purdue.edu/rusle2_dataweb*