

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 water
- Protect soil and water quality
- Manage pest populations
- Provide wildlife food and cover and pollinator habitat
- 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.

This standard shall not apply where heavy concentrated flows are anticipated, where water quality is the primary resource concern, or along the edge of a row crop field which will be used to receive and convey surface runoff. Refer to the conservation practice standards Grassed Waterway (412) or Filter Strip (393) or other practices as applicable.

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. However, the field border width shall never be less than 20 feet. If the field border is established for multiple purposes utilize the widest width.

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. Field borders may be established by planting or in some instances natural regeneration depending on objectives and resource concerns.

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.

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

Species selection for field border establishment should follow (327) Conservation Cover standard if the intended purpose of the practice is focusing on wildlife habitat. If the primary purpose of the Field border practice is reducing water erosion, follow Critical Area Planting (342) standard for species selection and seeding rates.

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

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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 of a sheet flow into the planned border area.

Additional Criteria to Reduce Erosion from Water

Establish stiff-stemmed, upright grasses, grass/legumes or forbs to trap water-borne soil particles. (See Table 1 for recommended seeding mixtures)

Table 1. Stiff Stemmed Grasses

Species	Soil Drainage ¹	Mature Height (feet)
big bluestem (<i>Andropogon gerardii</i>)	SPD-ED	3-9
Indiangrass (<i>Sorghastrum nutans</i>)	PD-ED	3-5
switchgrass (<i>Panicum virgatum</i>)	VPD-WD	3-6
The following species may be added to the seed mix not to exceed 50% of the total mix		
little bluestem (<i>Schizachyrium scoparium</i>)	MWD-ED	2-3
Canada wild rye (<i>Elymus canadensis</i>)	MWD-ED	3-4
Virginia wild rye (<i>Elymus virginicus</i>)	PD-WD	2-3

¹: VPD = Very Poorly Drained, PD = Poorly Drained
SPD = Somewhat Poorly Drained, MWD = Moderately Well Drained, ED = Excessively Drained

The amount of surface and/or canopy cover needed from the field border shall be determined using current approved water erosion prediction technology. Calculations shall account for the effects of other practices in the management system.

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 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. Border widths will be designed 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. insects, mites, etc.). Include appropriate plants 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. 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 and Pollinator Habitat

Establish plant species that provide wildlife food and cover for the target wildlife species and/or pollinator habitat.

Utilize the Kentucky Wildlife Habitat Evaluation Procedure (KWHEP) or as recommended by the Kentucky Department of Fish and Wildlife (KDFWR) to determine where and what type of field borders are appropriate for wildlife.

Vegetative successional state shall be maintained to accommodate target wildlife species requirements.

The ideal border should appear unkempt and be composed of a variety of plant species including forbs, grasses, legumes and possibly some shrubs.

Where erosion is not a concern, an effective wildlife border may be established by natural regeneration. This process is somewhat slower than planting and the land user has less control over plant species selection. In some instances, natural regeneration may encourage a greater diversity of annual and perennial plants and better structural cover for wildlife species. This technique should only be attempted where noxious weeds will not dramatically interfere with the intended community.

Sites that contain dense tall fescue sods or reed canarygrass stands may need to be renovated or eradicated prior to the establishment of more beneficial species.

The minimum established width of field borders where the primary purpose is wildlife habitat other than pollinators is 30 feet. The width of the border may need to be increased to protect the area if a portion of the field border will be used for equipment movement or turn rows in crop fields. In this case, the field border width should be sufficient to allow for a minimum of 10 feet of undisturbed habitat.

The ideal border should appear unkempt and be composed of a variety of plant species including forbs, grasses and or legumes. Vegetation established to provide habitat for

wildlife shall be native. Utilize the methods species and/or mixes in Tables 1, 2 and 3 identified in (327) Conservation Cover for field border establishment. Other species or mixtures may be suitable as specified by KDFWR or the State Biologist.

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. Vegetative successional state shall be maintained to accommodate target wildlife species requirements.

When wildlife and/or pollinators are a concern, a lower percent groundcover than would be needed if protecting soil and water quality was the only goal is acceptable as long as the soil resource concern is also adequately addressed (i.e. no excessive soil loss).

A. Herbaceous Wildlife Field Borders

The minimum width for herbaceous field borders where terrestrial wildlife is the primary purpose shall be 30 feet and should attain a height of 3-6 feet. It should be comprised of planted species as well as volunteer vegetation

In cropland settings, leaving 15-30 feet of standing crops could achieve a herbaceous wildlife field border purpose and provide supplemental food sources during winter months. Refer to the KWHEP to determine when this may be appropriate.

In most instances, planting along with volunteer species provide the optimum wildlife habitat. However, infestations of Johnsongrass and other non-beneficial plants should be controlled.

Periodic disturbance of field borders is necessary to stimulate growth of desirable vegetation and to eliminate encroachment of undesirable vegetation. As a rule of thumb, disturbance should occur within a field border every 3-5 years.

Not more than 50% of the entire field border habitat should be disturbed in any one year. In

addition, never disturb the entire field border habitat around a single field in the same year.

B. Planted Woody Borders for Terrestrial Wildlife

Borders may be established by planting to decrease the abruptness of edges and provides a smooth transition between the shorter vegetation and the adjacent woody cover.

This method may be useful in situations where cutback borders or edge feathering are not feasible or where particular concerns for aesthetics are needed.

A 30 foot minimum width consisting of at least two species and two rows shall be used for planted woody borders. Spacings may vary within rows depending on density needed.

Suitable shrubs and small trees may be selected from the *KY Tree and Shrub Establishment Guide* and conservation practice standard (612) Tree/Shrub Establishment or other species as recommended by KDFWR.

C. Field Borders for Pollinators

Field borders established for the primary purpose of providing forage for native pollinators shall be a minimum of 20 feet wide.

Sites that contain dense tall fescue sods may need to be renovated prior to re-establishment to more wildlife friendly species.

If utilized adjacent to cropland, the pollinator plant species selected shall provide supplemental forage during and outside the bloom period of the adjacent crop.

Delay harvesting, mowing, disking or other disturbance of the area until after the nesting season for ground-nesting birds and other animals.

Pollinator field borders shall consist of a minimum of ten species including one native grass; at least three species that bloom very early or early season; three mid-season and

three late season species. Refer to those species and mixes identified in (327) Conservation Cover suitable for pollinator habitat. Or, if available refer to the Kentucky Pollinator Handbook (KPH) for a list of native species and their blooming periods suitable for establishment.

Pesticide use shall be minimized in field borders established for pollinators. If required they shall be applied with the least disturbance, most direct methods and/or during periods when pollinators are the least active (i.e. dusk or night).

No more than 50 percent of the field borders surrounding a field shall be disturbed in any one year to maintain a supply of forage for native pollinators. Establish plant species that provide wildlife food and cover for the target wildlife species and/or pollinator habitat.

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). Contact state staff specialists to determine proper species selection for this purpose.

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.

Contact state staff specialists to determine proper species selection for this purpose.

CONSIDERATIONS

Consider the aspect, shade tolerance, soils, topography and climate when selecting plant materials for establishment.

Consider the potential loss of economic productivity of the area resulting from installation of field borders.

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.

Consider overseeding an existing grass border with legumes or forbs for plant diversity and wildlife benefits.

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.

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, pollinators, and wildlife benefits.

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 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.

Consider connectivity of habitats and the locations of other buffer practices during practice layout.

Where wildlife is a purpose, consider maximizing widths to minimize predation and enhance habitat.

Consider the use of two different zones within a field border to maximize the habitat and diversity. The zone closest to the field is subject to greater disturbance from farm equipment, while the outside zone is protected from frequent disturbance (refer to Figure 1).

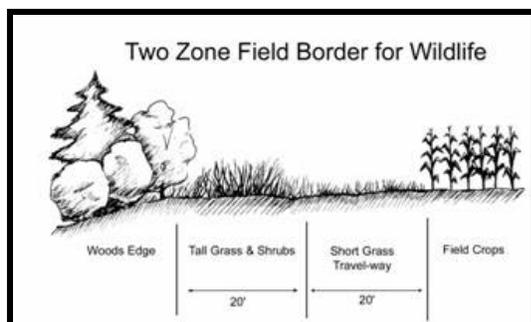


Figure 1. Two-zone field borders may be used to decrease the abruptness of edges and provide a smooth transition between the shorter vegetation and adjacent woody cover.

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 purpose
- Field border widths and lengths based on purpose
- 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.
- Planting dates and planting method.
- Any supplemental nutrients required to establish or maintain the border
- 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. NOTE: In some instances, fertilization may increase the density of the stand making it unsuitable for certain target species (i.e. bobwhite quail, pollinators, etc.).
- Repair and reseed ephemeral gullies and rills that develop in the border.
- 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 shall be scheduled to accommodate wildlife needs and other special requirements where feasible. For all purposes, delay maintenance, harvesting, weed control, mowing, disking or other disturbance of the area until after the primary nesting season (May 15 – Aug 1).
- Avoid vehicle traffic when soil moisture conditions are saturated.
- Periodic disturbance of field borders is necessary to stimulate growth of desirable vegetation and to eliminate encroachment of undesirable vegetation. As a rule of thumb, disturbance should occur within a field border every 3-5 years.
- Not more than 50% of the entire field border habitat should be disturbed in any one year. In addition, never disturb the entire field border habitat around a single field in the same year.

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.