

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
CONNECTICUT**

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 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 practice may also apply to other land uses where agronomic crops including forages are grown and where an assessment indicates that installation of this practice will meet the intended purpose(s).

On agricultural land, this practice applies when planned as a component of a conservation management system where soil loss is less than or equal to 2T and where a nutrient management plan and / or an integrated pest

management (IPM) plan or wildlife habitat management plan has been implemented.

On other land uses, this practice applies when planned as a component of an integrated pest management (IPM) plan or wildlife habitat management plan.

CRITERIA

General Criteria Applicable to All Purposes

Laws and Regulations. All Federal, state, and local laws, rules, regulations, and requirements governing the construction and use of this practice shall be followed.

Federally-listed noxious weeds and state-listed non-native, invasive plants shall not be established in the field border. Federally-listed noxious weeds shall be controlled if present.

If state-listed non-native, invasive plants are present, an assessment of the pros and cons of control will be made and acted upon.

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.

Site specific field border widths shall be determined using best professional judgment specific to the purpose or purposes for installing the practice.

The minimum width of a field border on agricultural land uses shall be twenty (20) feet.

For all other land uses, the minimum field border width shall be ten (10) feet.

Site conditions shall be assessed to determine surrounding land uses, soils, residual herbicides (to the extent known), available moisture during the growing season, and existing vegetation on the site and in adjacent areas, including the presence of any federally recognized noxious weeds or state recognized non-native (exotic, non-indigenous), invasive species.

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. Use of locally native plant species shall be encouraged.

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.

Ephemeral gullies and rills or concentrated flow paths 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.

Vegetative requirements including plant material, seedbed preparation, seeding rates, dates, depths, and planting methods shall be consistent with Connecticut NRCS Standard 327, Conservation Cover.

Apply supplemental nutrients as recommended by a soil test.

Natural regeneration may be an option for establishing vegetation on sites where seeds or rootstocks of desired species are present, and where an assessment indicates that the natural plant community will provide sufficient cover for the intended use of the field border. Natural regeneration is not a suitable option if there are significant site limitations (e.g. highly erodible soils, steep slopes, noxious weeds or other invasive species) which will inhibit establishment of the desired plant community.

Grazing of field borders shall be in accordance with Connecticut NRCS Standard 528, Prescribed Grazing.

Where sediments or other sediment-adsorbed contaminants in runoff are a concern, use the Connecticut NRCS Standard 393, Filter Strip or the Connecticut NRCS Standard 391, Riparian Forest Buffer to achieve a higher level of protection.

Additional Criteria to Reduce Erosion from Wind and Water

Field border establishment, in conjunction with other practices, will be timed so that the soil will be adequately protected during the critical erosion period(s).

Establish stiff-stemmed, upright grasses, grass/legumes or forbs to trap wind- or water-borne 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. 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 prevailing wind direction data.

Minimum height of grass or forbs shall be 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 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.

Promote infiltration of runoff by locating borders where concentrated water flows enter or exit a field.

Install borders to eliminate sloping end rows, headlands and other areas where concentrated water flows will enter or exit the field.

Install borders between water resources and certain recreational lands, residential yards or lawns to provide additional areas for infiltration.

Maintaining Field Setback Distances for Manure and Chemical Applications.

Border widths will be designed to conform to setback widths established by state or local regulations or requirements.

Labels on pesticide and chemical containers may also be used to determine required setback distances from resources of concern.

Design border widths to comply with all applicable State and local requirements regarding manure and chemical application setbacks. Refer to the approved comprehensive nutrient management plan (CNMP) for guidance.

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 Restore, Create or Enhance Herbaceous Habitat for Wildlife and Beneficial Insects or to Manage Pest Populations

If this is the only purpose, filter strip width and length shall be based on requirements of the targeted wildlife or insects. Density of the vegetative stand established for this purpose shall consider targeted wildlife habitat requirements and encourage plant diversity.

Dispersed woody vegetation may be used to the extent it does not interfere with herbaceous vegetative growth, or operation and maintenance of the field border.

The field border shall not be mowed during the nesting season of the target wildlife.

Livestock and vehicular traffic in the field border shall be excluded during the nesting season of the target species.

If this purpose is intended in addition to one or more of the previous purposes, then the minimum criteria for the previous purpose(s) must be met.

Additional field border width devoted to this purpose must be added to the width required for the other purpose(s).

Any addition to the flow length for wildlife or beneficial insects shall be added to the downhill slope of the field border.

Vegetation to enhance wildlife may be added to that portion of the field border devoted to other purposes to the extent they do not detract from its primary functions.

Plant species selected for this purpose shall be for permanent vegetation adapted to the wildlife or beneficial insect population(s) targeted.

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).

Use mechanical, cultural, and/or chemical techniques to reduce pest populations when and where they congregate in the field border. Contact the University of Connecticut, Cooperative Extension System, Integrated Pest Management Program for information.

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. [Each state should indicate here what documents are to be consulted by the planner to make the correct species choices for wildlife purposes or pollinator habitat.]

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

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 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.

CONSIDERATIONS

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.

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.

Water bars 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
- 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.

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 Connecticut NRCS Standard 386, Field Border Conservation Practice Job Sheet. 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.

AS BUILT DRAWINGS

As-built drawings shall be prepared which show all pertinent elements, extents and elevations as actually installed. A copy shall be provided to the owner / operator upon construction completion.

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.
- 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 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.

Vegetation in the Field Border

Describe what inspections are required to determine whether the desired vegetation is present in suitable quality, quantity, and distribution to meet the objectives of the practice.

Describe the extent of management needed to maintain the desired species composition or age class (if applicable), or if no management is required (e.g. natural area).

Nuisance Plants and Animals

Describe the extent to which plant and animal pest species, including Federally recognized noxious weeds or state recognized non-native (exotic, non-indigenous), invasive species.

Acceptable Uses

Describe the acceptable uses (e.g. grazing, hunting, nature preserve, etc.) and time of year

and frequency of use restrictions, if any. Pay particular attention to cost-sharing program requirements as they relate to acceptable versus restricted uses and other management restrictions.

In addition, the following operation and maintenance items shall also be included in the plan as needed:

- Traffic on field borders shall be avoided when soil is wet.
- Storm damage shall be repaired in a timely manner.
- Field borders shall be protected from livestock grazing, fire, and herbicides.
- Sprayers shall be shut off and tillage equipment raised to avoid damage to field borders.
- Border areas damaged by sediment deposition, chemicals, tillage or equipment traffic shall be shaped and reseeded.
- Borders shall be fertilized according to soil tests, mowed, and harvested as necessary to maintain plant vigor.

- Ephemeral gullies and rills that develop in the border shall be filled, graded and reseeded
- Federally recognized noxious weeds or state recognized non-native (exotic, non-indigenous), invasive species shall be controlled.
- Maintain herbaceous vegetation so that it provides at least 80% ground cover throughout the 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.