

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD AND SPECIFICATIONS

CONTOUR BUFFER STRIPS

(Acre)

CODE 332

DEFINITION

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips that are farmed on the contour.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce sheet and rill erosion.
- Reduce transport of sediment and other water-borne contaminants downslope, on-site or off-site.
- Enhance wildlife habitat.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland. It is most suited to uniform slopes ranging from 4 to 8 percent with slope lengths less than the Critical Slope Length (length of slope above which contouring loses its effectiveness). This practice is also most suitable in regions where rainfall intensities are low to moderate (10 year EI less than 140).

This practice is not suited to fields with extremely long slopes whose length exceeds the critical slope length for contouring by more than 1.5 times, unless the field slope length is shortened by the installation of conservation practices such as terraces.

This practice is more difficult to establish on undulating to rolling topography because of the difficulty in maintaining parallel strip boundaries across the hill slope or staying within row grade limits.

The narrow strips of permanent vegetative cover are not a part of the normal crop rotation.

This standard does not apply to situation where the width of the buffer strips will be equal to or exceed the width of the adjoining crop strips.

CRITERIA

General Criteria Applicable to All Purposes

No plants listed on the state and county noxious weed list will be established in a buffer strip cropping system.

a. Row Grade, Strip Boundaries, and Baselines

The grade of the cropped strip shall be aligned as closely as possible to the contour to achieve the greatest erosion reduction possible. The maximum grade of rows within the crop strips shall not exceed one-half of the up and down hill field slope or 2 percent, whichever is less.

For crops sensitive to standing water for periods less than 48 hours, design a positive row grade of not less than 0.5 percent from the nose of a hill or ridge toward a stable outlet. Up to 3 percent row grade is allowed for a maximum of 150 feet as crop rows approach a stable outlet.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resource Conservation Service or download the standard from the electronic Field Office Technical Guide for Missouri.

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When the grade of any crop strip reaches the maximum allowable design grade, a new baseline shall be established up or down slope from the last buffer strip and used for the layout of the next crop strip.

b. Arrangement of Strips

Cropped strips shall be alternated with buffer strips down the hill slope. Normally, a crop strip will occupy the area at the top of the hill.

When used in combination with terraces, the layout of buffer strips shall be coordinated with the grade and spacing of the terraces so that strip boundaries will parallel terraces whenever possible. The buffer strip shall occupy the terrace or diversion berm, the channel leading to a water and sediment control basin, or lie immediately up slope of the terrace or diversion channel.

c. Stable Outlets

Surface flow from the contoured crop rows must go to a stable outlet. Stable outlets include grassed waterways, underground outlets for terraces or diversions, water and sediment control basins, field borders, or similarly stabilized areas.

Additional Criteria to Reduce Sheet and Rill Erosion

a. Width of Strips

The buffer strips shall be of equal width except when a variable width is needed to keep either an adjacent cropped strip of uniform width or to maintain the strip boundary grades within required criteria. Width of buffer strips at their narrowest point shall be no less than 15 feet for grasses or grass and legume mixtures and no less than 30 feet when legumes are seeded without a grass component.

Cropped strips shall be of uniform width between the buffer strips and not exceed 50 percent of the slope length (L) used in the field erosion calculations.

Cropped strip width shall be designed to account for some multiple of the full width of all equipment used on the field.

b. Vegetation

Vegetation on buffer strips designed to reduce sheet and rill erosion shall be permanent vegetative cover consisting of grasses, legumes or grass-legume mixtures. Establish cover according to the PASTURE AND HAYLAND PLANTING (512) conservation practice standard.

Species shall be adapted to the site and tolerant of the anticipated depth of sediment deposition. The use of vegetation with upright, stiff stems is desired.

The buffer strips shall have vegetative cover that provides protective cover and induces sediment deposition during periods when erosion is expected to occur on the cropped strips.

The stem density for grass species shall be greater than 50 and for legumes greater than 30 stems per square foot.

c. Level of Erosion Control

The level of erosion control achieved by the buffer strip cropping practice shall meet or exceed the soil erosion level specified by the conservation plan objectives. Soil loss shall be determined using the current approved erosion prediction technology accounting for the impact of other conservation practices in the conservation system.

d. Headlands and End Rows

Determine the predicted erosion on headlands and end rows. Establish and maintain soil conservation measures to reduce soil loss to acceptable levels or keep headlands and end rows in permanent sod if the predicted erosion rate exceeds the objectives of the conservation plan.

Additional Criteria to Reduce Transport of Sediment and Other Water-borne Contaminants Downslope

a. Width of Strips

On fields having slopes exceeding 3 percent, the buffer strip width shall be based on the minimum treatment needed to reduce sheet and rill erosion

to acceptable levels. On slopes of 3 percent or less, the width of a buffer strip shall be 15 feet or wider.

The maximum width of cropped strips between buffer strips shall be one-half of the field slope length not to exceed 150 feet. Cropped strip width shall be designed to account for some multiple of full width operation of all equipment used on the field.

b. Vegetation

Buffer strips designed for this purpose shall be established in permanent sod forming vegetation with stiff, upright stems only. Establish vegetation according to the PASTURE AND HAYLAND PLANTING (512) conservation practice standard.

c. Arrangement of Strips

Buffer strips and crop strips will be alternated down the hill slope. A buffer strip will be established at the bottom of the slope. The width of this buffer strip will be two times the width of the other buffer strips in the system.

d. Headlands and End Rows

Headlands and end rows shall be vegetated and have a minimum width of 15 feet between the end of the tilled strip and field edge. All end rows will be eliminated.

Additional Criteria to Enhance Wildlife Habitat

To enhance wildlife habitat, seed mixtures will contain multiple grass species (3 or more) with 80 percent or more of the pure live seed rated good to excellent for wildlife habitat and erosion control. Establish vegetation according to the CONSERVATION COVER (327) practice standard. Add native forbs to the seed mixture for cover diversity.

Mow only after the desired species of ground nesting birds have hatched. Allow time for fall regrowth before the growing season ends.

To enhance cover, the minimum width of the buffer strips will be 30 feet or wider based on the requirements for nesting and escape cover for the targeted wildlife species.

The maximum width between buffer strips shall not exceed 200 feet.

CONSIDERATIONS

Protect areas of existing or potential concentrated flow erosion by any one or more suitable conservation practices such as grassed waterways, water and sediment control basins, diversions, or terraces. Establish these practices to reduce the slope length below the critical slope length when the soil loss objective has not been obtained.

On fields where row crops are a part of the rotation, establish field borders on headlands and end rows that are steeper than the designed grade of rows in the cropped strip. Where contour row curvature becomes too sharp to keep equipment aligned with rows during field operations, increase the buffer strip width to avoid sharp ridge points. These strips should be wide enough to allow equipment to be lifted and turned to meet the same rows across the turn strip.

Prior to design and layout, remove any obstacles or make changes in field boundaries or shape, where feasible, to improve the effectiveness of the practice and the ease of performing farming operations.

Prior to layout, inspect the field's position on the landscape to find key points for initiating layout or getting the width of one set of strips (one cropped and one buffer) to bypass an obstruction or ridge saddle. Within grade limits and whenever possible, run strip boundaries parallel with fence lines or other field features. Account for uncropped access road widths that may traverse the field by adjusting strip boundaries on either side accordingly.

Some weed growth may be allowed in the strips to provide an insect source for wildlife species. Add native forbs to the planting mixture for stand diversity.

Standing residual cover in the buffers provides early and late season nesting and escape cover for many species of wildlife displaced from other disturbed areas in the field.

PLANS AND SPECIFICATIONS

Site specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard.

Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Conduct all farming operations parallel to the strip boundaries except on headlands or end rows with gradients less than the criteria set forth in this standard.

Time mowing of buffer strips to maintain appropriate vegetative density and height for optimum sediment trapping during critical erosion periods. If wildlife enhancement is the primary objective, delay mowing until after the desired species of ground nesting birds has hatched.

Fertilize buffer strips as needed to maintain desired stand density.

Mow sod turn strips and grassed waterways at least annually.

Spot seed or totally renovate buffer strip systems damaged by herbicide application after any residual action of the herbicide allows seeding establishment.

Redistribute sediment accumulations along the up slope edge of the buffer-crop strip when needed to maintain uniform sheet flow along the strip boundary. If sediment accumulates just below the up slope edge of the buffer strip to a depth of 6 inches or more or the stem density falls below the minimum, relocate the buffer-crop strip interface.

Cultivated strips and buffer strips shall be rotated so that a mature stand of protective cover is achieved in a newly established buffer strip immediately above or below the old buffer strip before removing the old buffer to plant to crops. Reposition buffer strips in an established pattern to maintain their relative position on the hill slope.

Renovate vegetated headlands and end row areas as needed to keep ground cover above 65 percent.