

NATURAL RESOURCES CONSERVATION SERVICE

VIRGINIA CONSERVATION PRACTICE STANDARD

CONTOUR STRIPCROPPING

(Acre)

Code 585

DEFINITION

Growing row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips on or near the contour of the field slope.

across the hill slope or staying within row grade limits.

PURPOSE

- To reduce sheet and rill erosion.

CRITERIA

GENERAL

The level of erosion control achieved by the contour stripcropping system shall at least equal the soil erosion level specified by the conservation plan as determined by RUSLE.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to sloping cropland.

The critical slope length for contour stripcropping is 1.5 times the critical slope length for contour farming as determined from the Critical Slope Length Tables in Section 4 of the RUSLE Handbook.

Although this practice may be applicable on steeper slopes and/or in areas with higher 10-year-frequency, single storm EI values, it will be less effective in achieving the purpose of the practice on slopes exceeding 15 percent in areas with 10-year storm EI values greater than 140.

"P" subfactors will be developed in accordance with RUSLE. Refer to the Worksheet for Calculation of RUSLE P Subfactors which indicates information needed for subfactor development.

This practice has the greatest impact where cropped or fallow strips having less than 10 percent cover are alternated with close grown and/or grass/legume strips (Cover-Management Condition 1-2), or with strips of residue management, no-till/strip-till with 75 percent or greater surface cover (Cover-Management Condition 3).

No plants listed on the noxious weed list for Virginia will be established in the permanent vegetative correction strip(s) of a contour stripcropping system.

This practice is not well suited to rolling topography having a high degree of slope irregularity because of the difficulty of maintaining parallel crop strip boundaries

ROW GRADE

The row grade shall be aligned as closely as possible to the contour to achieve the greatest erosion reduction. The requirement of this standard shall be met when 90 percent or more of the crop area has rows with a maximum grade of 1.5% or 1/2 of the field slope percent (used for soil loss calculations), whichever is less.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

The remaining 10 percent or less of the crop area may have rows with a maximum grade of 3%, or 1/2 of the field slope percent (used for soil loss calculations), whichever is less.

NOTE: Percent makeup of the crop area with varied row grades may be randomly located across the field.

The maximum allowable row grade (as determined for the 10% crop area) is permitted for a distance of 150 feet, or 1/3 of the row length (flow distance in one direction), whichever is less. Example: If the total flow distance in one direction is 300 feet, then 100 feet will be the maximum distance of deviation.

Grade adjustments which exceed 1.5 percent should be made in the upper row reaches.

NOTE: Do not permit excessive furrow grades at or near row outlets.

The primary row grade selected for layout purposes (maximum of 1.5%) will be used for developing the "P" value in soil loss determinations, if deviations are only minor or insignificant. If there is a significant deviation (within the requirements of this standard) from the primary row grade, the percent row grade used will be calculated by the weighted average method. NOTE: See example under the Plans and Specifications Section.

CRITICAL SLOPE LENGTH

A contour stripcropping layout shall not occur on a slope that is longer than 1.5 times the critical slope length for contouring unless supported by other practices. Terraces or diversions may be used to reduce slope length below the critical length. Residue cover and roughness may be increased to decrease overland flow velocities. This also lowers the vegetative cover-management condition code. This results in an increase of the critical slope length and allows the use of this standard on longer field slopes. NOTE: Increasing roughness alone is not sufficient to change the critical slope length.

ALIGNMENT AND WIDTH OF STRIPS

Strip boundaries shall run parallel to each other as long as their grades meet the row grade criteria. When the row grade of any crop strip

reaches the maximum allowable design grade, a correction strip and new baseline will be established for the layout of the next crop strip.

When this practice is used in combination with diversions or terraces, coordinate the strip layout with the diversion or terrace grade and spacing so that strip boundaries will parallel either of these practices wherever possible within the criteria for row grade.

Width of cropped strips shall not exceed the lesser of the following:

- a. 50 percent of the slope length used for soil loss calculations with RUSLE, or
- b. Widths shown in Table 1 below:

TABLE 1

% Slope	Maximum Width of Strips
1 thru 2	130
3 thru 8	100
9 thru 16	80
17 thru 20	60
21 thru 25	50

NOTE: Crop strip width may be adjusted to the nearest multiple width of planting implements used in the field.

The correction strip may vary in width but shall be no narrower than the widest working farm implement used to transverse the strip.

ARRANGEMENT AND VEGETATIVE CONDITION OF STRIPS

Cropped strips will consist of alternate strips of erosion-prone crops or fallow (Cropland Cover-Management Conditions 4-7) down the slope with strips of erosion-resistant cover (Cropland Cover-Management Conditions 1-3). If condition 3 is utilized as one of the erosion resistant strips, at least 75 percent surface residue cover shall be present. The erosion resistant cover shall be present during periods when erosion is expected to occur.

No two adjacent strips shall be in an erosion-prone condition at the same time during the

year. However, two adjacent strips may be in erosion-resistant cover at the same time.

A vegetative cover shall be selected that is tolerant of the anticipated depth of sediment deposition and potential pesticide damage.

Correction strips shall be established to permanent grasses, legumes, or grass/legume mixtures. Species shall be adapted to the site.

STABLE OUTLETS

All runoff from the contour stripcropping system shall flow on to stable outlets. Stable outlets include grassed waterways, terraces, diversions, sediment basins, field borders, filter strips, and other similar measures.

CONSIDERATIONS

Prior to design and layout, obstruction removal and changes in field boundaries should be evaluated. Where feasible, suggest to the landowner that the effectiveness of the practice and the ease of performing farming operations may be improved if specific changes are made. When wildlife habitat is destroyed by the removal of obstructions, consider re-establishment of wildlife food and cover plantings on nearby areas.

Correction strips offer an excellent opportunity to mitigate the loss of wildlife habitat, or to establish new wildlife habitat areas; therefore, consider establishing these strips to grass and/or legume species or mixes suitable for wildlife habitat.

REMINDER: Tall fescue and Bermudagrass are not suitable species.

Correction strips which have a high percentage of clovers can attract deer and minimize the amount of foraging they might do on adjacent crop strips.

When haying of the correction strips is anticipated, establish the strips wide enough to accommodate harvesting equipment. NOTE: Suggest to the landowner/operator that haying not be performed during the nesting season of April 1 - August 15 if at all possible.

Consider the need for grassed waterways or other water conveyance measures (if none exist) in areas of concentrated flow.

Consider the need to establish field borders and/or filter strips (if none exist) along affected field edges to receive and dispose of diverted surface runoff.

Consider the need to establish permanent vegetative strips along "backbone" ridges to permit readjustment of row layout, and consequently re-alignment of farm equipment travel during planting, tillage, and harvesting operations.

Consider the width of the landowner/operator's farm machinery and implements when planning the width of the crop strips. The planned width should allow for optimum coverage to avoid overlaps and skipped areas.

Consider soil types, drainage characteristics and crop tolerance to wetness. Some plants (tobacco is an example) can not tolerate wet conditions. When inadequate drainage poses a potential problem, it may be desirable to lay out a system with row grades closer to the upper range permitted by this standard.

Consider that water infiltration increase may accelerate the transport of soluble pollutants to groundwater.

When the slope length used in erosion prediction exceeds the critical slope length for the cover-management condition that best characterizes the field to be contour stripcropped, plan structures, such as diversions or terraces, to reduce slope length below the critical slope length. (Retaining as much crop residue as possible on the soil surface by using residue management practices can also increase critical slope lengths.)

At time of layout, inspect the field's position on the landscape to find key points for starting layout or getting a full strip width to pass by an obstruction or ridge saddle. Whenever possible, run strip boundaries parallel with fence lines or other barriers, as long as row gradient criteria are met. Account for access road widths when they traverse the field, and adjust the strip boundary on either side accordingly.

In the layout process, parallel lines (within the crop strip) to each crop strip baseline should be temporarily flagged and their grades checked to assure positive row drainage whenever shallow depressions are encountered and/or significant slope changes begin to occur.

The conservation crop rotation on stripcropped fields should be consistent with the farm enterprise crop mix and/or associated livestock operation. These will influence the proportion of row crops, close growing crops, and meadow crops.

To avoid wide fluctuations in acreage of different crops from year to year, fields having identical crop rotations can be set up that are nearly equal in size and have offset years of rotation commencement. The number of fields needed to produce a nearly constant acreage of each crop for each year in the rotation is equal to one half of the years in the rotation. Even-year rotation lengths are preferable to odd-year rotation lengths for ease of design.

Additional conservation practices may need to be used in combination with this practice to meet the goals of the conservation management system.

PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of the Virginia Conservation Practice Standard *Contour Stripcropping (Code 585)* shall be prepared according to the Criteria, Considerations, and Operation and Maintenance described in this standard and shall be recorded on approved specification sheets and job sheets, and as narrative statements in conservation plans.

As a minimum, record and maintain the following planning data:

- Tract number, field number, and acres
- Field slope length and slope percent used for soil loss calculations
- Critical slope length (1.5 times that for contouring)

- An establishment plan for the permanent correction strips including width, type of vegetation, planting specifications, and any operation and maintenance requirements
- A detailed sketch of the contour stripcropping layout (include location and kind of row outlets used). NOTE: An aerial map may be used in lieu of a sketch if scale permits
- Row grade used for layout

EXAMPLE: ROW GRADE CALCULATION WHEN SIGNIFICANT DEVIATIONS OCCUR
(Used to develop "P" value)

Given: 6% slope used for soil loss calculation, primary row grade of 1.5%, 90% of rows on 1.5% grade, 10% of rows on 3% grade.

% of rows	Row Grade %	Total
90	1.5	135
<u>10</u>	3.0	<u>30</u>
100		165

165 divided by 100 = 1.65 weighted average grade

NOTE: The furrow grade/profile grade ratio would be 1.65/6 or .275. Round to the nearest tenth of 0.3, and use with Table #4 of the RUSLE Handbook to adjust contouring "P" subfactor.

- Soil Loss Calculations
- Completed Worksheet for Calculation of RUSLE "P" Subfactor
- Statement of compliance with this standard (includes associated plans and specifications) along with signature of technician and date. If applicable, the responsible technician will also document that a copy of the "Establishment Plan" for establishing permanent vegetative correction strips has been provided to the landuser.

REPORTING AND/OR CERTIFICATION PROCEDURE

Reporting the contour stripcropping system as "applied" and/or certifying the completion of this practice will only be done after the practice has been installed in accordance with this Virginia Conservation Practice Standard and the erosion resistant crop strips have been established.

OPERATION AND MAINTENANCE

Conduct all farming operations parallel to the crop strip boundaries.

Substituting a crop different from one called for in the planned crop rotation, or adjusting the crop rotation due to failed crops or loss of stand, is acceptable, provided neither situation allows two adjacent erosion-prone strips.

Width and alignment of contour strips will be maintained in accordance with original design.

Soil test at least once every 3 years, and apply needed lime and fertilizer on the correction strips to maintain a vigorous and dense growth of vegetative cover.

Control weeds and woody growth on vegetated correction strips by appropriate methods. For wildlife benefits, do not mow during the nesting season (April 1 - August 15). NOTE: Removal of the cut material by haying, etc., will enhance wildlife habitat. Do not leave a stubble height of less than 8 inches when cutting native warm season grasses.

To further enhance wildlife habitat, provide option to mow the vegetated correction strips and remove the growth only every 2 or 3 years, if adaptable to the farming operation.

Advise the landuser to monitor the contour stripcropping system on a continuous basis and to inspect for row breakovers and/or excessive scouring along row furrows. NOTE: Measures will be taken to correct any problems detected as soon as feasible and practical.

Diversions or terraces installed in conjunction with a contour stripcropping system shall be maintained in accordance with their respective original design, layout, and construction.

Periodically inspect, and adequately maintain grassed waterways, field borders, filter strips, turn strips, or other measures used to receive and convey runoff from the field, and/or used to facilitate equipment operation.

REFERENCES

1. Ag. Handbook #703, Predicting Soil Erosion by Water: A Guide To Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE).
2. "Native Warm Season Grasses for Virginia and North Carolina (Benefits for Livestock and Wildlife)" by the Virginia Dept. of Game and Inland Fisheries, Revised 1995.
3. "Planting and Managing Switchgrass for Forage, Wildlife and Conservation", Publication #418-013, Virginia Cooperative Extension, by Dale D. Wolf and David A. Fiske, 1995.
4. GM-190, Part 410, "Compliance with NEPA", VA Amendment.

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Approved Practice Narrative

(Acre)

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585 D1 Contour Stripcropping: Any combination of row crops, close growing crops, or grass/legume crops will be grown in alternating strips on a two year or more rotational basis. Strips will be established, operated and maintained in accordance with the Virginia Conservation Practice Standard and specifications provided.

585 D2 Contour Stripcropping: Maintain existing contour stripcropping system in accordance with the Virginia Conservation Practice Standard and specifications provided.

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