

NATURAL RESOURCES CONSERVATION SERVICE
VIRGINIA CONSERVATION PRACTICE STANDARD

CONTOUR FARMING

(Acre)

CODE 330

DEFINITION

Tillage, planting, and other farming operations performed on or near the contour of the field slope.

the conservation plan as determined by RUSLE.

Critical slope length for contour farming shall be determined from appropriate tables in Section 4 of the RUSLE Handbook.

PURPOSE

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

- To reduce sheet and rill erosion

"P" subfactors will be developed in accordance with RUSLE.

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

CONDITION WHERE PRACTICE APPLIES

This practice applies to sloping cropland.

Contour farming is most effective on slopes between 2 and 10 percent. This practice will be less effective in achieving the stated purpose on slopes exceeding 10 percent and in areas with 10-year-frequency, single storm EI values greater than 140.

This practice may not be well suited to rolling topography having a high degree of slope irregularity because of the difficulty meeting row grade criteria.

ROW GRADE

The row grade shall be aligned as closely as possible to the contour to achieve the greatest erosion reduction. The requirements 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.

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.

CRITERIA

GENERAL

Additional conservation practices shall be applied in combination with contour farming to achieve the soil erosion level specified by

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.

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

330-VA-2

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.

When the row grade reaches the maximum allowable design grade, a new baseline shall be established up or down slope from the last contour line and used for layout of the next contour pattern. NOTE: Distance between contour baselines may be adjusted to the nearest multiple width of the implements used in the field.

In the absence of permanent row markers, a minimum of one permanent measure shall be established.

Additional markers, such as permanent vegetative strips (commonly referred to as correction strips), will also be established along the field slope profile as needed to maintain row grades as specified above.

Contour markers may be field boundaries, hedgerows, fence lines, access lanes, terraces, vegetative strips, etc. Existing measures (with the exception of terraces and diversions) proposed to be used as permanent row markers shall meet the row grade criteria of this standard. NOTE: Existing or planned terraces or diversions shall meet the design, layout, and construction requirements set forth in their respective Conservation Practice Standard.

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 farming layout shall not occur on a slope that is longer than the critical slope length, 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.

STABLE OUTLETS

All runoff from contouring systems 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 of permanent vegetative cover, established to serve as row guides, 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.

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 through August 15, if at all possible.

Consider which type or types of permanent row markers or guides to establish (if none exist) to allow long term management of the field on the contour. NOTE: Correction strips planned for permanent row markers should be wide enough to accommodate the

equipment needed for its establishment and adequate maintenance.

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 re-adjustment of row layout and consequently re-alignment of farm equipment travel during planting, tillage, and harvesting operations.

Consider the width of the operator's farm machinery and implements when planning the distance between contour baselines. The planned width should allow for optimum coverage to avoid overlaps or skipped areas. Some implements of significance are planters, drills, row crop cultivators, and sprayers. NOTE: Consider increasing the planned width slightly to allow for some downhill slippage of farm machinery and for operator error.

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.

In the layout process, parallel lines to the initial baseline and to subsequent (if applicable) baselines should have their grades checked at closer intervals than normally done whenever shallow depressions are encountered and/or significant slope changes begin to occur.

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

PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of this practice 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 data:

- Tract number, field number, and acres
- Field slope length and slope percent used for soil loss calculations
- Critical slope length
- 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 layout (include location and type of permanent row markers; as well as 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
10	3.0	30
<hr/> 100		<hr/> 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
- Statement of compliance with this Standard (includes associated plans and specifications) along with signature of technician and date.

OPERATION AND MAINTENANCE

Conduct all cultural operations parallel to established row markers or to existing markers, provided the applicable row grade criteria are met.

Adequately maintain all existing and/or newly established markers in accordance with original system layout to facilitate the continuation of the contour farming system.

Width and alignment of permanent correction strips will be maintained in accordance with original design and layout. Strips shall be maintained in a vigorous and dense growth of acceptable cover. Have soil tested at least once every 3 years and apply needed lime and fertilizer.

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 farming 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 farming 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. NRCS, VA, RUSLE Handbook.
3. GM-190, Part 410, "Compliance with NEPA", VA Amendment.

NATURAL RESOURCES CONSERVATION SERVICE

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CONTOUR FARMING

Approved Practice Narrative

(Acre)

CODE 330

330 D1 Contour Farming: Conduct all tillage and planting operations on the contour. Rows will run parallel to permanently established measures having

grades within the limits of the Virginia Conservation Practice Standard and specifications provided.

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