NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

STRIPCROPPING

(acre)
Code 585

Stripcropping Layout

DEFINITION

Growing planned rotations of row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips across a field.

PURPOSE

- Reduce soil erosion from water and transport of sediment and other water-borne contaminants.
- Reduce soil erosion from wind.
- Protect growing crops from damage by wind-borne soil particles

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on cropland or other land where crops are grown.

CRITERIA

General Criteria Applicable to all Purposes

Arrangement and Vegetative Condition of Strips. Alternate strips of crops susceptible to erosion with strips of erosion-resistant crops or cover. The orientation should be at angles as close to perpendicular to water and wind erosion forces as practical.

Strip Width. The erosion-resistant and erosion-susceptible strips should be of approximately equal width. Strip widths should be multiples of the width of the planting equipment.

Vegetative Cover. Vegetation in a strip cropping arrangement should be made up of crops and/or forages grown in a planned rotation. At least 50% of the rotation needs to consist of erosion resistant crops or sediment trapping cover. Dense stands of grasses or legumes, hay crops nearing the end of their first growing season, fallow untilled small grain residue, or close grown crops that provide the needed protective cover during the target erosion period are examples of erosion resistant strips. It is important that no two adjacent strips be in an erosion-susceptible condition at the same time during the year. However, two adjacent strips may be in erosion-resistant cover at the same time.

The same crop rotation can be followed on each adjacent strip as long as the sequence of the rotation is staggered or offset within or between years in to gain the sediment trapping effect. A vegetative cover should be selected that is tolerant of the anticipated depth of sediment deposition.

When the erosion-resistant strip is in living vegetation, the species established needs to be either be tolerant to herbicides used on the cropped strips or protected from damage by herbicides used on the cropped strips.

Acceptable protective cover includes a growing crop (e.g., grasses, legumes, or grass-legume mixtures), standing stubble, or residue with enough surface cover to provide protection or surface roughness sufficient to provide protection.

The latest approved soil and wind erosion prediction technology will be used to determine the effectiveness of field stripcropping.

Any adapted pasture grass, with or without legumes, may be used for strips. In addition, small grain or other close-growing crops may be used if they provide a good cover when the cultivated area is most susceptible to erosion. See the Florida NRCS Conservation Practice Standard, Forage and Biomass Planting, Code 512, Guidance for recommended species, seeding rates, and planting dates.

Stripcropping can be used in conjunction with other conservation practices (diversions, grass waterways, field borders, crop residue use and conservation tillage) for more effective erosion control.

Evaluate and avoid or minimize impact to cultural resources, wetlands, and Federal and State protected species to the extent practical during planning, design and implementation of this conservation practice. For more information, see National and Florida NRCS policy, General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH, Handbooks Title 180 Part 600) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH, Handbooks Title 190 Part 601); and The National Environmental Compliance Handbook (NECH, Handbooks Title 180 Part 610).

Additional Criteria to Reduce Soil Erosion from Water and Transport of Sediment and Other Water-borne Contaminants

Number of Strips. At a minimum, a stripcropping system needs to consist of two or more strips within the conservation planning slope length or "L".

Alignment of Strips. Run strip boundaries parallel to each other and as close to the contour as practical.

Strip Width. Base strip widths based on the planning objective and the approved erosion prediction technology. The width of a strip should not exceed the critical slope length for contouring.

If a correction strip is required, that strip may vary in width but should be no narrower than the widest working field implement used to traverse the strip.

Where field contours become too sharp to keep machinery aligned with the contour during field operations, establish sod turn-strips on sharp ridge points and or valleys. These strips need to be wide enough to allow the equipment to be lifted and/or turned and meet the same rows across the turn strip.

Minimum Row Grade. Design row grades for soils with slow to very slow infiltration rates (soil hydrologic groups C or D), or for crops sensitive to ponded water conditions for periods of less than 48 hours, with positive row drainage of not less than 0.2 percent on slopes where ponding is a concern.

Maximum Row Grade. The maximum row grade shall not exceed:

One-half of the up-and-down hill slope percent used for conservation planning, or 10 percent, whichever is less.

Up to a 25% deviation from the design row grade is permitted within 150 feet of a stable outlet.

When the row grade reaches the maximum allowable design grade, establish a new baseline (key line) up or down slope from the last contour line and used for layout of the next contour pattern.

Headlands/End Rows:

On fields where row crops and tillage are a part of the rotation, maintain headlands/end rows with a slope steeper than the maximum allowable row grade for that field in permanent sod or crops should be planted using Florida NRCS Conservation Practice Standard, Residue Management, No-till/Strip-till/Direct Seed, Code 329.

Additional Criteria to Reduce Soil Erosion from Wind

Number of Strips. A strip cropping system shall consist of two or more strips within the wind erosion simulation area.

Alignment of Strips. Strip boundaries shall run parallel to each other.

Orientation. Strips shall be oriented as close to perpendicular to the prevailing wind erosion direction as practical.

Width of Strips. Determine strip width of strips using the currently approved wind erosion prediction technology to meet the soil loss objective. See Florida Erosion Control Handbook. Calculation needs to account for the effects of other practices in the conservation management system.

Measure the effective width of strips along the prevailing wind erosion direction for those periods when wind erosion is expected to occur and for which the system is designed.

When the orientation of erosion-susceptible strips deviates from perpendicular to the prevailing wind erosion direction, adjust the width of these strips correspondingly using current wind erosion prediction technology. To determine how much, see the directions given in the Florida Erosion Control Handbook and in the Wind Erosion section of the National Agronomy Manual (Manuals Title 190 NAM).

Additional Criteria to Protect Growing Crops from Damage by Wind-borne Soil Particles

Strip width. Measure the effective width along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles.

The width of strips should not exceed the width permitted by the crop tolerance to wind erosion during specific crop stage periods, using current wind erosion prediction technology. Refer to the crop tolerances as specified in the National Agronomy Manual (Manuals Title 190 NAM), in the Florida Erosion Control Handbook, other accepted technical references, or other planned crop protection objectives.

When the orientation of erosion-susceptible strips deviates from perpendicular to the prevailing wind erosion direction, adjust the width of these strips correspondingly using current wind erosion prediction technology.

Number of Strips. A strip cropping system needs to consist of two or more strips within the wind erosion simulation area.

Alignment of Strips. Run strip boundaries parallel to each other.

Orientation of Strips: Orient strips as close to perpendicular to the prevailing wind erosion direction as practical.

CONSIDERATIONS

Strip cropping may need to be used in combination with other conservation practices to meet the goals of the resource management system.

Wildlife benefits can be enhanced by delaying mowing on sod turn-strips until after the nesting season (March 15th – July 15th).

If planning to use a permanent vegetative strip, consider minimizing the use of pesticides and planting pollinator friendly vegetation which offers food and shelter for these species. For pollinator specific plants or more information on farming for pollinators refer to the www.xerces.org website.

Stripcropping can reduce airborne particulate matter (PM) emissions.

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

To avoid wide fluctuations in acreage of different crops from year to year, 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, e.g., a 4-year rotation should have 2 fields. Even-year rotation lengths are preferable to odd-year rotation lengths for ease of design.

Prior to design and layout, see Florida NRCS Conservation Practice Standard, Obstruction Removal, Code 500, or changes in field boundaries or shape should be considered, where feasible, to improve the effectiveness of the practice and the ease of performing field operations across the slope.

Prior to layout, inspect the field to find key points for commencing layout or getting a full strip width to pass by an obstruction or ridge saddle. Whenever possible, run the strip boundary parallel with fence lines or other barriers, as long as row gradient criteria are met. Account for access road widths when they must cross the field, and adjust the strip boundary on either side accordingly.

When this practice is used in combination with Florida NRCS Conservation Practice Standards Diversion, Code 362, or Terrace, Code 600, coordinate the strip layout with the diversion or terrace grade and spacing so that strip boundaries will parallel terraces wherever possible within the criteria for row grade. Where grass-back or narrow-base terraces are used, allow for the uncropped width along the terrace so that the same strip width is maintained for all strips in the field.

Stable outlets may be necessary where runoff results in concentrated flow erosion. Acceptable stable outlets include the following Florida NRCS Conservation Practice Standards Grassed Waterways, Code 412; Field Border, Code 386; Filter Strip, Code 393; Water and Sediment Control Basin, Code 638; or Underground Outlet, Code 620, for terraces and diversions.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or treatment unit according to the criteria, considerations, and operations and maintenance described in this standard.

Record specifications using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

At a minimum, include the following items in the plan:

1. Acres of the field
2. Number and width of strips
3. Minimum and maximum row grades.
4. Alignment, orientation and width (for wind erosion)
5. Vegetative cover planned
6. Water Erosion Prediction Results (RUSLE2).
7. Wind Erosion Prediction Results (WEQ).

OPERATION AND MAINTENANCE

Maintain a good cover in the strip by periodically applying lime and fertilizer according to soil tests and needs of the crop. Apply according to Florida NRCS Conservation Practice Standard Nutrient Management, Code 590. Weeds should be controlled by mowing or application of approved herbicides. f herbicides are used, read and follow all label warnings and directions. Apply herbicides and/or pesticides according to Florida NRCS Conservation Practice Standard Integrated Pest Management, Code 595. Timing of mowing or herbicide applications should be based on wildlife considerations.

Smooth or remove and distribute sediment over the field as necessary to maintain practice effectiveness.

Mow sod turn-strips at least once a year. If possible, mow in fall or winter to minimize disturbance to wild life species. Harvesting is optional.

Manage erosion-resistant strips in rotation to maintain the planned vegetative cover and surface roughness.

If the strip alignment is lost due to adjacent strips being in hay or permanent cover, re-establish the original strip alignment and width as needed.

Prepare a site specific written operation and maintenance (O&M) plan for the owner or operator to use. The O&M plan should include periodic inspections and prompt repair or replacement of damaged components.

REFERENCES

Foster, G.R. 2004. Draft reference guide, Revised Universal Soil Loss Equation Version 2, (RUSLE2). National Sedimentation Laboratory, Oxford, MS.

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USDA, ARS. 2010. The wind erosion prediction system, (WEPS ver. 1.0), User Manual, Wind Erosion Research Unit, Manhattan, Kansas.

The Xerces Society and NRCS, 2005. Farming for Pollinators: Native bees and your crops.