NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

STRIPCROPPING

(Ac.)

CODE 585

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. Strips of crops susceptible to erosion shall be alternated with strips of erosion-resistant crops or cover. The orientation shall be at angles as close to perpendicular to water and wind erosion forces as practical.

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

Vegetative Cover. Vegetation in a strip cropping arrangement shall consist of crops and/or forages grown in a planned rotation. At least 50% of the rotation shall consist of erosion resistant crops or sediment trapping cover. Erosion resistant strips shall consist of dense 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. No two adjacent strips shall 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 shall be followed on each adjacent strip while the point or year in the sequence of the rotation is staggered or offset to gain the sediment trapping effect. A vegetative cover shall be selected that is tolerant of the anticipated depth of sediment deposition.

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

Acceptable cover is specified by each specific purpose as stated below.

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

Number of Strips. A strip cropping system shall consist of two or more strips within the conservation planning slope length or “L”.

Alignment of Strips. Strip boundaries shall run parallel to each other and as close to the contour as practical.

Strip Width. Strip widths shall be based on the planning objective and the approved

erosion prediction technology. The width of a strip shall not exceed the critical slope length for contouring.

If a correction strip is required, that strip may vary in width but shall 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 shall 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. 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, shall be designed 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, a new baseline (key line) shall be established 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, headlands/end rows with a slope steeper than the maximum allowable row grade for that field shall be maintained in permanent sod or planted using residue management, no-till/strip-till.

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. The width of strips shall be determined using the currently approved wind erosion prediction technology to meet the soil loss objective. Calculation shall account for the effects of other practices in the conservation management system.

The effective width of strips shall be measured 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, the width of these strips shall be correspondingly adjusted using current wind erosion prediction technology.

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

Strip width. The effective width shall be measured 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 shall 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, 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, the width of these strips shall be correspondingly adjusted using current wind erosion prediction technology.

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 of Strips: Strips shall be oriented 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.

Stripcropping can reduce airborne particulate matter (PM) emissions.

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 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, obstruction removal 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 diversions or terraces 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 grassed waterways, field borders, filter strips, water and sediment control basins, or underground outlets for terraces and diversions.

PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of Stripcropping shall be prepared for each field or treatment unit according to the Criteria described in this standard.

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

OPERATION AND MAINTENANCE

Sediment accumulations along strip edges shall be smoothed or removed and distributed over the field as necessary to maintain practice effectiveness.

Mow sod turn-strips at least once a year. Harvesting is optional.

Erosion-resistant strips in rotation shall be managed 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, the original strip alignment and width will be re-established as needed.

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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Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE). U.S. Department of Agriculture, Agriculture Handbook No. 703.

USDA, ARS. 2006. The wind erosion prediction system, (WEPS ver. 1.0), User Manual (draft), Wind Erosion Research Unit, Manhattan, Kansas.