

Cross Wind Stripcropping (Acre) 589B

DEFINITION

Growing crops in strips established across the prevailing wind erosion direction, and arranged so that strips susceptible to wind erosion are alternated with strips having a protective cover that is resistant to wind erosion.

PURPOSES

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

- Reduce soil erosion from wind.
- Protect growing crops from damage by wind-borne soil particles.
- Reduce phosphorus and pesticide losses.
- Reduce soil compaction.
- Increase crop productivity.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland, or other land where crops are grown where:

- There is a high risk of wind blown soil polluting surface water with pesticides or nutrients.
- Soil compaction from current tillage methods increases runoff and soil erosion.

CRITERIA

General Criteria Applicable To All Purposes Named Above

a. Number of Strips

A cross wind stripcropping system shall consist of at least two strips.

b. Width and Direction of Strips

Strips having protective cover and managed as part of a crop rotation may be the same width as the erosion-susceptible strips or may be narrower, but in any case shall not be less than 15 feet.

The maximum width of strips, measured perpendicular to strip direction, shall not exceed 660 feet.

When the direction of erosion-susceptible strips deviates from perpendicular to the prevailing wind erosion direction, the width of these strips shall be correspondingly reduced in accordance with the Wind Erosion Equation.

c. Arrangement of Strips

Strips susceptible to wind erosion shall be alternated with strips that provide protective cover.

Crops shall be rotated so that protective cover is maintained in alternate strips during those periods when wind erosion is expected to occur.

Two or more strips having protective cover may be next to each other, but a strip providing protective cover must separate strips susceptible to erosion.

d. Vegetative Cover

Vegetation in a stripcropping arrangement consists of crops grown in a planned rotation.

Alternate strips shall be crops or crop residues, which provide protective cover during those periods when wind erosion is expected to occur.

Acceptable protective cover includes a growing crop; including grasses, legumes, or grass-legume mixtures, standing stubble, or tilled residue with enough surface cover to provide protection.

Additional Criteria to Reduce Soil Erosion from Wind

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.

Strip width as determined by the Wind Erosion Equation in Section I-A of the FOTG shall not exceed that permitted by the soil loss tolerance (T), other planned soil loss objective, or the maximum permissible width specified in this standard.

The width of strips shall be determined using the wind erosion prediction technology in Section I-A of the FOTG. Calculations shall account for the effects of other practices in the conservation management system.

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

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*, as specified in the Field Office Technical Guide, other accepted technical references, or other planned crop protection objective.

* Crop tolerance to wind erosion is the maximum rate of soil blowing that the plants can tolerate without significant plant damage due to abrasion, burial, or desiccation. See Section I-A, Table 1, of the FOTG, Crop Tolerances to Blowing Soil.

The width of strips shall be determined using the current wind erosion prediction technology in Section I-A of the local FOTG to estimate wind erosion during specific crop stage periods. Calculations shall

account for the effects of other practices in the conservation management system.

Additional Criteria to Reduce Nutrient and Pesticide Losses from Wind Erosion

Reduce triazine pesticide use by 100 percent by growing herbicide compatible crops in narrow strips.

The most economical weed control strategy is to use weed control products registered for use in both corn and soybeans. Refer to product labels and approved weed control manuals to select alternative weed control herbicides.

Clearfield corn hybrids can be used in (6-row) corn and soybean narrow strips with Pursuit to reduce loss of atrazine into surface water runoff. Or Roundup Ready corn and soybeans can be planted in narrow strips to achieve the same objective. Use WIN_PST to determine other herbicide alternatives. See the MI NRCS Pest Management standard (595) for additional herbicide alternatives.

High residue management tillage systems such as no-till or mulch till should be used to prepare a seedbed where surface wind or water erosion affects water quality.

Additional Criteria to Control Traffic and Reduce Soil Compaction In Narrow Stripcropping

In narrow strips equal to one pass of the equipment width, use no-till or ridge till to confine wheel tracks to the same area each year.

Planter width and harvest equipment should be multiples of each other to achieve efficient use of labor and equipment. Corn and soybean or dry edible bean strips should be the same width for controlled traffic management and crop rotation plans.

Limit field traffic axle loads to less than 5 tons / axle during harvest and other field trips to minimize soil compaction.

Additional Criteria to Reduce Soil Loss of Phosphorus in Sediment

Reduce wind and water erosion soil loss with residue management tillage systems such as mulch till or no-till each year.

Row crop cultivation may be used to control weeds as long as adequate cover is maintained through 50% plant canopy.

CONSIDERATIONS

The effectiveness of Cross Wind Stripcropping is maximized when the strips are oriented as close to perpendicular as possible to the prevailing wind erosion direction for the period for which the system is designed.

Transport of wind-borne sediment and sediment-borne contaminants offsite is reduced by this practice when used in a conservation management system.

Where this practice is used in combination with the practice, Conservation Crop Rotation (328), the stripcropping design must be consistent with the crop sequence.

Strip widths may be adjusted, within the limits of the criteria above, to accommodate widths of farm equipment to minimize partial or incomplete passes.

Alternative practices that may be used to separate erosion-susceptible strips include Cross Wind Trap Strips (589C), Herbaceous Wind Barriers (422A), or Windbreak and Shelterbelt Establishment (380).

To improve corn yield, in narrow strips, increase corn row populations in outside rows up to 30% greater than inside rows to improve light use efficiency.

In narrow strips, select a corn hybrid that can tolerate high populations without lodging. Select hybrids compatible to herbicides used in the crop rotation. Select herbicides that will not affect crop rotation plans in the future.

For narrow strips, use a row system equal to or less than 8 rows to take advantage of field edge sunlight and increase yield by narrow stripcropping. Orient rows North and South to make maximum use of sunlight.

For narrow strips, a modified system that alternates small grains next to corn can be planned to enhance the rotation effect and eliminate shading on the soybeans next to the corn.

Use a no-till drill to sow small grains in a ridge till system.

Use harvest rows to plan the narrow stripcropping system.

Alternate herbicides with different modes of action to manage the potential build-up of herbicide-resistant weeds.

PLANS AND SPECIFICATIONS

Specifications for establishment and maintenance 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. See Michigan Cross Wind Stripcropping Conservation Sheet.

Specifications shall be recorded using the Cross Wind Stripcropping Conservation Sheet, Narrow Stripcropping sheet or equivalent documentation per MI NRCS FOTG, Section IV, Support Data and Documentation.

OPERATION AND MAINTENANCE

Erosion-resistant strips in rotation shall be managed to maintain the planned vegetative cover and surface roughness during periods when wind erosion is expected to occur. The protective cover must be adequate to inhibit the initiation of wind erosion and to trap saltating soil particles originating upwind.

Wind-borne sediment accumulated along strip edges shall be removed and distributed over the surface of the field as determined appropriate.

Rotate crops in strips to reduce insecticide use and prevent disease, insect or pest build-up.

Control perennial weeds by spot spraying, rope wicking, rouging or other techniques to keep them from becoming a weed control concern.