United States Department of Agriculture

Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

HERBACEOUS WIND BARRIERS

CODE 603

(ft)

DEFINITION

Herbaceous vegetation established in narrow strips within the field to reduce wind speed and wind erosion.

PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Reduce wind erosion (creep, saltation, suspension)
- Reduce particulate matter emissions and airborne dust
- Improve plant productivity and health

CONDITIONS WHERE PRACTICE APPLIES

Cropland where wind erosion is a resource concern.

CRITERIA

General Criteria Applicable to All Purposes

Design the practice to reduce wind energy and wind erosion using current wind erosion prediction technology.

Use herbaceous plant materials that have the following characteristics:

- Perennial, annual, or mix
- Adapted to local site conditions (i.e., soil and climate factors)
- Erect growth habit with stiff stems
- Resistant to lodging and strong leaf retention
- Tolerant to soil deposition
- Minimize competition to adjacent crop growth

Use the current NRCS-approved wind erosion prediction technology to design herbaceous wind barriers orientation, spacing, composition, width, and height to achieve the desired purpose.

Herbaceous wind barriers are installed across the prevailing wind erosion direction as determined by site conditions and current wind erosion prediction technology soil loss objectives for the planned crop system.

Where both wind and water erosion are a concern, orient the vegetative barriers to address both concerns.

Avoid water accumulation and erosion adjacent to the vegetative barriers going up and down slope.

Herbaceous wind barriers consist of one or more rows that provide the required porosity to achieve the planned soil loss objective. Within row spacing must not be greater than 36 inches wide.

Spacing between herbaceous wind barriers is measured along the prevailing wind erosion direction during the critical wind erosion periods for the field. To accomodate equipment width and achieve planned soil loss, herbaceous barrier spacing must not exceed 10 times the planned herbaceous wind barrier height, plus or minus 10 percent.

Design herbaceous wind barriers to have a minimum expected height of 1.5 feet and porosity of 40 to 50 percent during the critical wind erosion periods.

Additional Criteria to Reduce Wind Erosion and Particulate Matter Emissions

Wind barriers have a minimum expected height of 1.5 feet and porosity of 40 to 50 percent during the wind erosion periods for which the barriers are designed.

Additional Criteria to Improve Plant Productivity and Health

During periods when sensitive crops are susceptible to damage by wind and wind-borne soil particles do not exceed the crop tolerance values as specified in table 502-1, “Crop tolerance to blowing soil,” in the NRCS National Agronomy Manual (Title 190), Part 502.

Example: Small cotton plants have a low tolerance for blowing soil which is 1 ton per acre. When using erosion prediction technology planned soil loss should not exceed 1 ton per acre when plants are at this small growth stage.

Design herbaceous wind barriers for this purpose to have a minimum expected height of 1.5 feet and porosity of 40 to 50 percent during the critical wind erosion period to protect growing crops.

CONSIDERATIONS

Herbaceous wind barriers are most effective when combined with other conservation practices as a resource management system.

Adjust the spacing of barriers within the field to the limits of criteria above to accommodate width of field operations and minimize partial or incomplete passes.

Manage pest control in adjacent fields with techniques and pesticides that will not irreversibly damage the vegetation in the herbaceous wind barrier.

Select plant materials that attract undesirable insects away from crops or desirable insects that are beneficial to the adjacent crops.

Select plant materials that enhance food and cover for targeted wildlife, beneficial insects, and pollinators.

Increasing the minimum width of the barrier and choosing species with greater above and below ground (roots) biomass will increase the potential for carbon sequestration.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field site where Conservation Practice Standard Herbaceous Wind Barrier (Code 603) will be installed. Record practice specifications on the associated implementation requirement document, including—

- Conservation purposes for the herbaceous wind barriers.
- Benchmark crop system wind erosion estimates.
- Predominant wind erosion direction from benchmark simulation.
- Planned crop system with herbaceous wind barriers and wind erosion estimates.

- Number of planned herbaceous wind barriers and their positions within the field.
- Planned herbaceous wind barrier effective height, width, and porosity.
- Planned crop strip width between herbaceous wind barriers.
- Plant materials used, seeding rate, method, and timing.
- A field map showing the planned positioning of the herbaceous wind barriers.

OPERATION AND MAINTENANCE

- Reestablish annual herbaceous wind barriers each year by planting at recommended dates, leaving rows of vegetation standing and maintained throughout the critical periods for which the barrier was designed.
- Reestablish gaps in herbaceous wind barriers (e.g., 10–15 feet) as soon as practical to maintain barrier effectiveness.
- Nutrients are supplied as needed and weeds are managed to maintain the planned growth and effectiveness of the herbaceous wind barriers.
- When herbaceous wind barriers become ineffective due to sediment accumulation or begin to accumulate runoff along the leading edge of the barriers, reposition and reestablish the wind barriers as needed after leveling the accumulated sediment.

REFERENCES

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