



Producer:

Location:

Farm Name:

Project or

Contract:

County:

Tract Number:

**Practice Lifespan – 15 years**



**Practice Purpose(s):** (check all that apply)

Reduce soil erosion from wind.

Alter the microenvironment for enhancing plant growth.

Provide shelter for structures, animals, and people.

Provide noise screens.

Improve air quality by reducing and intercepting air borne particulate matter, chemicals and odors.

Improve irrigation efficiency.

Reduce energy use

Protect plants from wind related damage.

Manage snow deposition.

Enhance wildlife habitat.

Provide visual screens.

Delineate property and field boundaries.

Increase carbon storage in biomass and soils.

Other: (Specify)

**Description of work:**

**NRCS Review Only**

Designed By:

Date

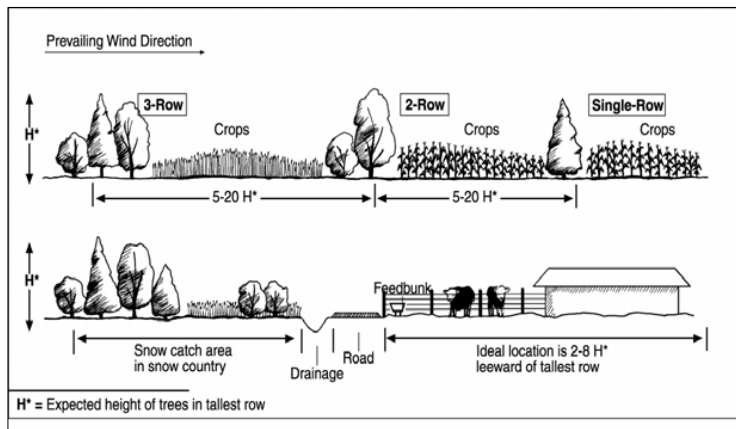
Checked By:

Date

Approved By:

Date

## 380 – Windbreak / Shelterbelt Establishment Implementation Requirements



A windbreak or shelterbelt usually consists of multiple rows, with shrubs in the outer rows and taller trees in the interior.

Complimentary practices work with these environmental buffers to further control erosion and snow deposition and modify site characteristics for habitat and screening purposes. For comprehensive protection of a field, windbreaks are placed in a series across the area (typically spaced as intervals of 5 to 20 times the height of each windbreak), with individual windbreaks running parallel to one another, but perpendicular to prevailing winds.

### General Criteria Applicable to All Purposes:

Additional requirements are found in the Implementation Requirements and or practice specification sheets. Specifications and site design for this practice shall be transmitted to clients using approved Vermont NRCS 380 Implementation Requirements sheets.

The location, layout and density of the planting will accomplish the purpose and function intended within a 20-year period.

Refer to Tree/Shrub Site Preparation Standard 490, for preparing site conditions for plant establishment.

The maximum design height (H) for the windbreak or shelterbelt shall be the expected height of the tallest row of trees or shrubs at age 20 for the given site.

Species must be adapted to the soils, climate and site conditions.

No plants on the Federal or state noxious or invasive weeds list shall be planted.

Spacing between individual plants shall be based on the needed growing space for plant type and species, the accommodation of maintenance equipment, and the desired characteristics of the stem(s), branches and canopy as required for a specific purpose.

The windbreak will be oriented as close to perpendicular to the troublesome wind as possible.

The length of the windbreak will be sufficient to protect the site including consideration for the “end effect” and changes in wind direction.

Avoid planting trees or shrubs where they will interfere with structures and above or below ground utilities.

Moisture conservation or supplemental watering shall be provided for plant establishment and growth where natural precipitation is too low for the selected species.

Refer to Tree/Shrub Establishment Standard 612 for further guidance on planting trees and shrubs.

### Additional Criteria to Reduce Wind Erosion and Protect Growing Plants

(Check if applicable)

The interval between windbreaks shall be determined using current, approved, wind erosion technology. Interval widths shall not exceed that permitted by the soil loss tolerance (T), or other planned soil loss objective. Calculations shall account for the effects of other practices in the conservation management system.

For wind erosion control, temporary measures will be installed to supplement the windbreak until it is fully functional.

## **380 – Windbreak / Shelterbelt Establishment Implementation Requirements**

Sites, fields, and plants are protected within an area 10 times the design height (H) on the leeward side and two times the design height (H) on the windward side of the windbreak.

Select species that are taller than the crops being protected.

### **Additional Criteria to Manage Snow Deposition**

(Check if applicable)

The windbreak will be oriented as close to perpendicular to the snow-bearing wind as possible.

For snow distribution across a field, the windbreak density (during expected snow-producing months) shall not be less than 25 percent or greater than 50 percent. The interval between barriers will not exceed 20H.

For snow accumulation, the minimum barrier density, during expected snow-producing months, will be 50 percent.

The length of the windbreak will extend beyond the area being protected to allow for end drifts.

Windbreaks will be located so that snow deposition will not pose a health or safety problem, management constraints, or obstruct human, livestock or vehicular traffic.

Where water erosion and/or runoff from melting snow is a hazard, it shall be controlled by supporting practices.

### **Additional Criteria to Provide Shelter for Structures, Livestock and People**

(Check if applicable)

For wind protection, the minimum barrier density will be 65 percent during the months of most troublesome wind.

The area to be protected will fall within a leeward distance of 10H.

Drainage of snowmelt from the windbreak shall not flow across the livestock area.

Drainage of livestock waste from the livestock area shall not flow into the windbreak.

### **Additional Criteria for Noise Screens**

(Check if applicable)

Noise screens shall be at least 65 percent dense during the time of the year when noise is a problem, as tall as, and as close to the noise source as practicable.

The length of the noise screen shall be twice as long as the distance from the noise source to the receiver.

For high-speed traffic noise, the barrier shall not be less than 65 feet wide. For moderate speed traffic noise, the barrier width shall not be less than 20 feet wide.

Species selected will be tolerant to noxious emissions, sand, gravel depositions or salt spray from traffic areas.

### **Additional Criteria for Visual Screens**

(Check if applicable)

Visual screens shall be located as close to the observer as possible with a density, height and width to sufficiently block the view between the area of concern and the sensitive area.

### **Additional Criteria to Improve Air Quality by Reducing and Intercepting Airborne Particulate Matter, Chemicals and Odors**

(Check if applicable)

The windbreak interval shall be less than or equal to 10h depending on site conditions and related supporting conservation practices.

Windbreak density on the windward side of the problem source, (i.e. particulate, chemical or odor) shall be greater than 50% to reduce the airflow into the source area.

Windbreak density on the leeward side of the problem source, and windward of the area to be protected, shall be greater than 65%.

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Select and maintain tree and shrub species with foliar and structural characteristics to optimize interception, adsorption and absorption of airborne chemicals or odors.

### Additional Criteria for Increasing Carbon Storage in Biomass and Soils

(Check if applicable)

Maximize width and length of the windbreak to fit the site.

For optimal carbon sequestration, select plants that have higher rates of sequestration in biomass and soils.

Plant and manage the appropriate plant spacing for the site that will maximize above and below ground biomass production

Minimize soil disturbance during establishment and maintenance of the windbreak/shelterbelt.

### Additional Criteria for Enhancing Wildlife Habitat

(Check if applicable)

Plant species selection shall benefit targeted wildlife species including pollinators.

Design dimensions of the planting shall be adequate for targeted wildlife species.

### Additional Criteria for Improving Irrigation Efficiency

(Check if applicable)

For sprinkler irrigation systems, the windbreak shall be taller than the spray height.

The windbreak shall not interfere with the operation of the irrigation system.

### Additional Criteria to Reduce Energy Use

(Check if applicable)

Orient the windbreak as close to perpendicular to the troublesome wind as possible

Use proper plant density to meet energy reduction needs.

Use plants with a potential height growth that will be taller than the structure or facility being protected.

### Operation and Maintenance:

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance).

- Replacement of dead trees or shrubs will be continued until the windbreak/shelterbelt is functional.
- Supplemental water will be provided as needed.
- Thin or prune the windbreak/shelterbelt to maintain its function.
- Inspect trees and shrubs periodically and protect from adverse impacts including insects, diseases or competing vegetation. The trees or shrubs will also be protected from fire and damage from livestock and wildlife.
- Periodic applications of nutrients may be needed to maintain plant vigor.

**Specific Additional Operation and Maintenance Requirements For Your Practice:**

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### 380 – Windbreak / Shelterbelt Establishment Implementation Requirements

**Specifications:**

<b>Location and Layout of Windbreak/Shelterbelt:</b>		(Attach a sketch or map)
<b>Width (feet):</b> include widths of maintenance areas next to outer rows):	<b>Length (feet):</b>	<b>Total Acres:</b>
<b>Plant Spacing:</b>	<b>Distance Between Rows:</b>	<b>Planting Date:</b>
<b>Total area of zone protected/sheltered</b> (acres) based on expected height and density of the windbreak/shelterbelt):	<b>Additional requirements:</b>	

Woody Plant Materials Information:							
Species/cultivar by row number:	Kind of stock <sup>1</sup> :	Number of Plants by Row:					Required Protection:
		Row 1	Row 2	Row 3	Row 4	Total:	
Total Plants Per Row:							Total Plants

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### Temporary Storage Instructions

Planting stock that is dormant may be stored temporarily in a cooler or cool, moist, darkened area up to 3 days. For more than 3 days or for stock that is expected to begin growth before planting, dig a V-shaped trench (heeling-in-bed) sufficiently deep and bury seedlings so that all roots are covered by soil. Pack the soil firmly and water thoroughly.

Additional Requirements:

### Site Preparation

Remove debris and control competing vegetation to allow enough spots or sites for planting and planting equipment. The following method of site preparation is planned:

Mechanical means such as plowing, disking or rototilling,

Chemical control of vegetation,

Hand scalping the area where trees are to be planted,

Other:

Additional Requirements:

### Planting Methods

For container and bareroot stock, plant stock to a depth even with the root collar in holes deep and wide enough to fully extend the roots. Pack the soil firmly around each plant. Cuttings are inserted in moist soil with at least 2 to 3 buds showing above ground. Pest Management including weed control is required.

Vegetation Mat-Size \_\_\_\_\_ # \_\_\_\_\_ Tree Shelter-Size \_\_\_\_\_ # \_\_\_\_\_ Other \_\_\_\_\_

Additional requirements:

### Additional Specifications and Notes

Refer to the [612 Tree/shrub Establishment Specification Guide Sheet](#) (attached).

A map(s) showing all sites/areas planned for Windbreak/Shelterbelt Establishment is attached.

If you have questions about this planned **Windbreak/Shelterbelt Establishment** practice contact:

Name:		Tel:		Email:	
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