

Windbreak/Shelterbelt Establishment

Conservation Practice Job Sheet

380

Instructor Solution for Doug and Kathy Fir, CMU 1a



Definition

Windbreaks or shelterbelts are plantings of single or multiple rows of trees or shrubs that are established for environmental purposes. Living snowfences are an important variation of windbreaks and shelterbelts in some parts of the country. The height of the tallest row and overall density of foliage and branches of an individual windbreak/shelterbelt planting greatly influence the size of the nearby area that is protected or sheltered.

Purpose

Windbreaks or shelterbelts are generally established to protect or shelter nearby, leeward areas from troublesome winds. Such plantings are used to reduce wind erosion, protect growing plants (crops and forage), alter microenvironment to enhance plant growth, manage snow, improve irrigation efficiency, and delineate field boundaries. Windbreaks also protect structures and livestock, provide wildlife habitat and travel corridors, enhance aesthetics, and

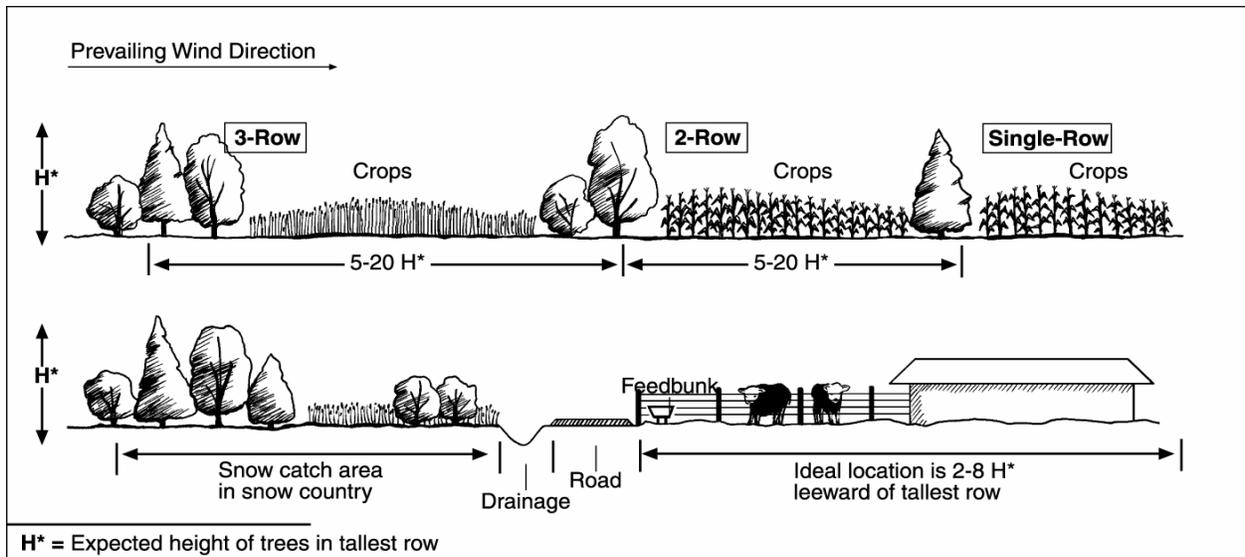
increase carbon storage. Also, when used as a living screen, windbreaks control views, reduce noise, and intercept chemical drift.

Where used

Windbreaks are “environmental buffers” that are planted in a variety of settings, such as on cropland, pasture, and rangeland (sometimes referred to as “living barns”); along roads, farmsteads, feedlots; and in urban areas.

Resource management system

Windbreaks and shelterbelts are normally established concurrently with other practices as part of a resource management system for a conservation management unit. For example, conservation crop rotation, residue management, and windbreaks can act together to control wind erosion year-round.



A windbreak or shelterbelt usually consists of multiple rows, with shrubs in the outer rows and taller trees in the interior. Complementary practices work with these environmental buffers to further control wind 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 at intervals of 5 to 20 times the height of each windbreak), with individual windbreaks running parallel to one another, but perpendicular to prevailing winds.

Wildlife

For plantings to function properly, access by livestock and certain wildlife must be managed year-round (use exclusion and fencing). Connecting shelterbelts with existing or planned perennial vegetation, such as woodlots and woody draws (tree/shrub establishment) or riparian areas (riparian forest buffer), provides additional benefits for wildlife and aesthetics. Select native or adapted species that provide wildlife food or cover.

Operation and maintenance

Trees and shrubs in a windbreak or shelterbelt need periodic maintenance and, later on, possible renovation (tree/shrub pruning and windbreak/shelterbelt renovation). In arid areas windbreaks may need supplemental water or the use of water-harvesting techniques for successful establishment.

Specifications

Site-specific requirements are listed on the specifications sheet. Additional provisions are entered on the job sketch sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See practice standard Windbreak/ Shelterbelt Establishment, code 380.



This multiple-row windbreak protects the adjacent farmstead and provides important wildlife habitat.

Windbreak/Shelterbelt Establishment – Job Sheet

Landowner Doug and Kathy Fir Field number 1a

Purpose (those that don't apply are lined out)	
<input type="checkbox"/> Reduce soil erosion from wind	<input type="checkbox"/> Provide living noise screens
<input type="checkbox"/> Protect plants from wind-related damage	<input type="checkbox"/> Provide living visual screens
<input type="checkbox"/> Alter microenvironment for enhancing plant growth	<input type="checkbox"/> Provide living barriers against airborne chemical drift
<input type="checkbox"/> Manage snow deposition	<input type="checkbox"/> Delineate property and field boundaries
<input type="checkbox"/> Provide shelter for structures, livestock, and recreational areas	<input type="checkbox"/> Improve irrigation efficiency
<input type="checkbox"/> Enhance wildlife habitat by providing travel corridors	<input type="checkbox"/> Enhance aesthetics
	<input type="checkbox"/> Increase carbon storage

Location and Layout (See diagram next page.)	
Width (feet; include widths of maintenance areas next to outer rows): West 3-row = 45'; Center single = 20'; North 2-row = 30'	
Length (feet): All windbreaks = 600 each	Area (acres): 1.3
Total area of zone protected/sheltered (acres; based on expected height and density of the windbreak/shelterbelt): 10	
Additional requirements: The north windbreak is located 2H from the county road to allow storage of snow drifts.	

Woody Plant Materials Information					
Species/cultivar by row number:	Kind of stock ¹ :	Planting Dates	Distance between plants within row (ft):	Total number of plants for row:	Distance (ft) from this row to next row ² :
1 West, Row 1 (windward) = shrubA,B,...or E	BA	Mar 15-30	3	200	15
2 West, Row 2 = treeE	BA	Mar 15-30	12	50	15
3 West, Row 3 = treeA,B,...or D	BA	Mar 15-30	8	75	--
4 Center, Single-row = treeE	BA	Mar 15-30	12	50	--
5 North, Row 1 (windwd) = shrubA,B,...or E	BA	Mar 15-30	3	200	15
6 North, Row 1 = treeE	BA	Mar 15-30	12	50	--
7					--

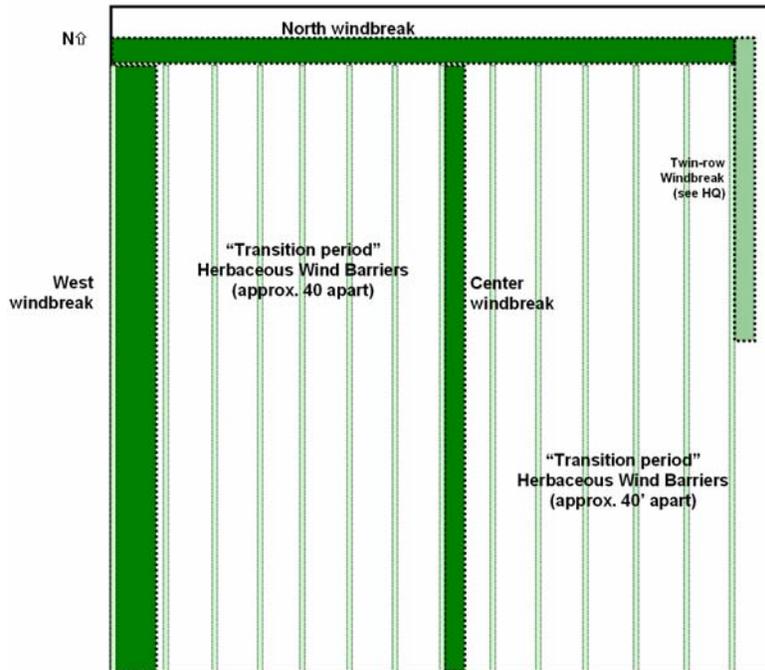
¹BA=bareroot, C=Container, U=Cutting; include size, caliper, height, and age as applicable. ²Adjusted for width of maintenance equipment.

Temporary Storage Instructions
<i>Planting stock that is dormant may be stored temporarily in a cooler or protected area. For bareeroot 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: Inspect for environmental and pest damage before storage and again before planting.</i>
Site Preparation
<i>Fall till the planting areas the year before planting, then lightly till and culti-pack 2-3 weeks before planting.</i>
Planting Methods
<i>For container and bareeroot 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. Additional requirements: Mark the plantings with stakes to be visible during farm operations during the first 2 years.</i>
Operation and Maintenance
<i>Inspect windbreak/shelterbelt components periodically and protect from damage so proper function is maintained. Replace dead or dying tree/shrub stock and continue control of competing vegetation to allow proper establishment. Install and begin supplemental irrigation if required. Additional requirements: Place plant protective tubing on all stock to minimize deer damage; maintain until plants 'outgrow' deer browsing. Lightly cultivate to remove weed growth as needed. Apply prescribed herbicides (re local extension agent) per label as needed immediately surrounding plant if necessary (protect plants from direct spray).</i>

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If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

Scale 1"= 200 ft.



Note: Winds are from the northwest.

Additional Specifications and Notes:
<i>Windbreak tallest row = 30 feet height. The "center" windbreak is place approx. 30H or 300' from the west boundary and will eventually protect to 30H or 300' eastward.</i>
<i>Set-back of the "north" windbreak from the county road is to accommodate snow drifts.</i>
<i>A 2H windward effect to the north of the "north" windbreak will reduce field wind erosion and crop damage sufficiently in the area between the county road and the windbreak.</i>
<i>Note to students: <u>Herbaceous wind barriers</u> (603) are part of the conservation plan and shown on the sketch above because of their importance to the wind erosion control system on this CMU. An assumption was made that the herbaceous barriers reach a 4-foot height and reduce erosion to acceptable levels until windbreaks are near to fully functional. In an actual field situation, job sheets for both Herbaceous Wind Barriers and Windbreak/Shelterbelt Establishment would be needed.</i>

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