

THE OUTSIDER

Illinois Extension Horticulture serving Henry, Mercer, Rock Island, and Stark



WINDBREAKS FOR WINTER DAYS

Traditionally, windbreaks are linear plantings layered with trees and shrubs primarily designed to reduce wind speeds. Also known as shelter belts, windbreaks have the potential to provide additional benefits of creating wildlife habitat, improved biodiversity, soil protection, energy savings, shade, visual screening, and more. Windbreaks are utilized as critical components of agriculture around the world and have been for centuries.

HISTORIC PLANTING EFFORTS

In the Midwest, shelterbelts hold ecological and historical significance. In 1934, at the height of the Dust Bowl, President Franklin D. Roosevelt included in the New Deal resources to strategically plant windbreaks on farms where the reduced wind speeds would also reduce the severe soil erosion and dust storms of the era. The Civilian Conservation Corps (CCC) and Works Progress Administration (WPA) planted over three billion trees and established state nurseries. To this day, many of these projects remain, although many are in need of restoration or rejuvenation.



Functioning windbreaks reduce wind speeds by intercepting air flow and causing a change in velocity. As the wind is interrupted by plant material, the air is diverted over, around, and through the plant material at lower speeds. The efficacy of a windbreak is influenced by orientation, plant height, planting length, and continuity. The most effective windbreaks are planted perpendicular to prevailing winds. Plant height greatly influences how much impact a windbreak will have and is used to predict how far downwind the impact will be felt. The length of a planting determines how much land the trees will protect and having a continuous stretch of a windbreak will minimize the risk of wind tunnels.



BY DESIGN

The optimal windbreak design includes multiple rows of plant material of multiple species; two or three rows of conifers on the windward side, a few rows of deciduous trees on the interior, and a few rows of shrubs on the leeward side. Windbreaks planted with a mix of species are better able to withstand pest and disease pressure over time. Traditionally, windbreaks are represented in graphics as straight-row plantings along the edge of a property and can be seen in this form throughout the midwestern landscape. However, groups of trees in any configuration or at any size can provide protection and windbreak benefits.

URBAN WINDBREAKS

The style of windbreak described above is reminiscent of those found on rural farmsteads, but the benefits of a windbreak can be achieved in an urban environment. Communities that prioritize and manage an urban forest will experience reduced wind speeds. Conifers are most impactful as windbreak species, but a dense canopy of deciduous trees will interrupt wind speeds. Managing an urban forest includes planting tree species that will reach large mature sizes, providing adequate space and protection for trees to grow large over time, and funding and implementing a maintenance program that will promote tree health and vigor. The cumulative impact of trees in an urban forest can act as a windbreak to help reduce winter windchill, while also providing summer shade, helping manage stormwater, producing clean air, and creating more livable cities.



CONIFER SPECIES FOR WINDBREAKS

Eastern White Pine (*Pinus strobus*)

- Native to Illinois
- Mature size of up to 80' height and 40' spread
- Prefer light, well-drained soil
- Easily transplanted, quick to establish, and fast-growing



Eastern White Pine (*Pinus strobus*)

Eastern Red Cedar (*Juniperus virginiana*)

- Native to Illinois
- Mature size of up to 50' height and 20' spread
- Requires full sun and is tolerant of a wide range of soil types
- Tolerant of heat, wind, and salt.



Eastern Red Cedar (*Juniperus virginiana*)

Norway Spruce (*Picea abies*)

- Mature size of up to 60' height and 30' spread
- Fastest growing of the *Picea* spp.
- Branches develop weeping branches that arch upward at the ends
- Popular rural windbreak tree throughout the Midwest



Norway Spruce (*Picea abies*)

Arborvitae (*Thuja occidentalis*)

- Mature size of up to 60' height and 15' spread, varies with cultivars
- Narrow, pyramidal shape
- Requires adequate moisture and loam to clay soils
- Unique scale-like leaves arranged in a fan-like shape



Arborvitae (*Thuja occidentalis*)

OUTSIDER ACTION

Try these activities to be more of an Outsider:

- Notice where snow drifts occur and look for the plant or object that caused the wind to slow down, dropping the snow.
- Take a drive through the rural landscape with the purpose of appreciating mature windbreaks.

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