

How and What Trees To Plant for Windbreaks

What is a Windbreak?

A windbreak is a tall, dense continuous wall of vegetation. The height determines how far wind protection extends, and the density determines the degree of protection. The general rule is that a windbreak will reduce wind to a distance 10 times its height and reduce wind speed 70 to 80 percent immediately inside the barrier. There are two kinds of windbreaks - field windbreaks and farmstead windbreaks.

Field Windbreaks

The primary purpose of a field windbreak is to control soil erosion and to prevent crop damage and loss caused by wind. Field windbreaks are one of the most important conservation practices in areas with relatively flat landscapes and light sandy or organic soils. Field windbreaks commonly have only 1-3 rows of plants due to space limitations, but will protect the soil from blowing up to 10 times the height of the trees. With a field windbreak not only will you save valuable topsoil, you will likely see an increase in crop yield in the area protected.

Farmstead Windbreaks

Farmstead windbreaks provide wind protection for the home, farm buildings, feedlots, and livestock enclosures. The coldest and most damaging winds come from the north and west. You will want to orient your windbreak perpendicular to the wind, on the north and west sides of your home or farmstead.

Advantages of Windbreaks

Windbreaks block a driving wind so that working outside becomes more comfortable in summer and in winter. A good windbreak can reduce home heating costs 10 to 15 percent. Building maintenance costs are reduced, too, as a windbreak lessens the sandblasting effects of wind on house paint. A windbreak is also a sound barrier, since a tall, dense windbreak will dull the noise of traffic, machinery, and animals. Shrubs and trees attract wildlife, are pleasant to look at, and add spice to the landscape. Windbreaks provide a cool escape in summer, a shelter in winter, and, as a living snow fence will keep the snow drifts off your driveway. All in all, a windbreak is a valuable asset to any property and a sound investment.

Planning Your Windbreak

Most of the tree and shrub species available today are suited for well-drained, loamy soils for best development and growth. If you have shallow soils (6" or less to bedrock), clay soils with very low fertility, or poorly drained soils, contact the local Service Forester's office for appropriate species to plant.

Plan for Growth

As your windbreak grows, the taller trees can create hazards if they're too close to the road. Plantings must be at least 30 feet from the edge of a roadway to prevent winter icing in shady spots and to prevent obscuring motorists vision. A windbreak that will be north or west of a building or road must be planted at least 65 feet from the edge to eliminate snow drifting.

Watch out for overhead utility lines. Trees and tall shrubs need to be at least 20 feet from utility lines to allow maintenance vehicles to pass and to prevent branches from interfering with lines. Remember not to plant over the easement on underground utilities.

Designing Your Windbreak

A standard farmstead windbreak has at least three rows: the outside, or windward, row; one or more interior rows; and the inside, or leeward, row. Four to six rows provide greater protection, but even one or two rows are beneficial.

The ideal planting design for your windbreak is illustrated in Figure 1.

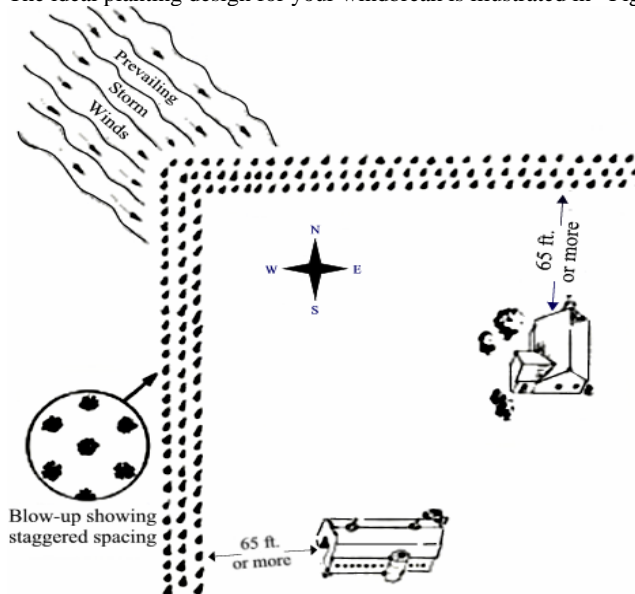


Figure 1: Typical windbreak layout in relationship to wind direction and farmstead.

Plan on leaving 10-15 feet between rows so you will have room to get in with mowing equipment long into the life of your windbreak. **Distance required between plants within a row varies by species (Table 1).** To offer wind protection earlier in the life of the planting, the second row should be offset (staggered in spacing) from the plants in the first and third rows.

Table 1: Recommended species and spacing for windbreak plantings

Shrubs: space plants 4' apart in rows and 6' apart between rows

- Dogwoods
- Ninebark
- American cranberry highbush

Small trees: space plants 8' apart in rows and 10' apart between rows

- Crabapple
- Hawthorn
- Wild plum

****Conifers:** space 8' apart in rows and 10-15' apart between rows

- Norway spruce
- White pine
- Red cedar
- White spruce
- Red pine

****Recommended**

Hardwoods: space 10' apart in rows and 10-15' apart between rows

- Pin oak
- Green ash

For the windward and leeward (inside) rows, plant a shade-tolerant conifer that won't lose its lower limbs as it matures. White spruce and Norway spruce are good choices because they will still provide a barrier near the ground even as they grow taller. For the interior row use a tree species that will add height, so choose something at least as tall as the outside row. White pine and red pine are also good choices. But remember, some species do better in certain parts of the state than others.

Windbreaks for Wildlife

Many windbreaks would be considered complete with three rows, however the addition of a fourth and fifth row using small trees and shrubs substantially increases the wildlife value of a windbreak (Figure 2).

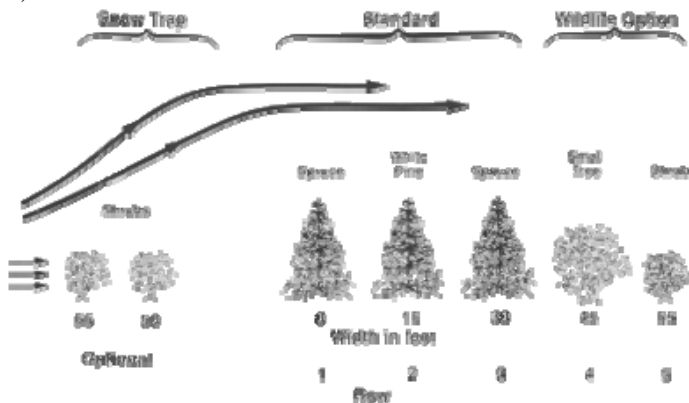


Figure 2: Cross section of a standard 3-row windbreak with the addition of rows 4 and 5 as a wildlife option and an optional snow trap.

Adding small trees and shrubs provides ground level shelter, seasonal food, and more diverse nesting habitat. By increasing the width of the windbreak, you also increase the nest density and nest success of wildlife species living in the windbreak. And all of these things mean you will have more opportunity to view wildlife using your windbreak.

Adding 1-2 rows of shrubs 50 feet from the windward side of the windbreak will act as a trap to catch snow before it gets to the main body of the windbreak. By trapping snow before it gets to the windbreak, you increase the winter cover value of the windbreak and reduce tree damage from heavy snow loading.

Generally the location of a windbreak is determined by factors other than potential wildlife benefits. There are, however, some locations that are more beneficial for wildlife. Placement of the windbreak on the north side of row crop fields that will not be fall-plowed will increase the winter food value of such stubble by reducing the likelihood of the stubble being snow-covered. Also, tying the windbreak to existing permanent cover such as woody draws or woodlots will improve its usefulness to wildlife by allowing the windbreak to serve as a travel lane between cover types.

There can be instances though where establishing a windbreak would actually be detrimental to wildlife. A windbreak of shrubs would be a better choice in these areas than tall conifers.