



Windbreak/Shelterbelt Establishment Fact Sheet

USDA Natural Resources Conservation Service - North Dakota

April 2004

Applicable to windbreaks, shelterbelts, and living snow fences
Conservation practice - 380



3-row living snow fence protective major highway

What is a windbreak?

Windbreaks, shelterbelts, and living snow fences are single or multiple row plantings of trees and/or shrubs. Site limitations and the owner's purpose for the planting often determine the size and design of a windbreak.

How it helps

Windbreaks can reduce erosion, protect growing plants, alter microenvironments to enhance plant growth, manage snow, improve irrigation efficiency, and delineate field boundaries. They also protect structures and livestock, provide wildlife habitat and corridors, enhance

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

To apply this practice

Determine the purpose of the planting.

- Dense windbreaks are often designed to protect buildings, livestock, roads, wildlife, store carbon, or act as a screen. Increased windbreak density can be achieved by increasing the number of rows in the planting, reducing the within-row spacing, or adding conifers or shrubs to the mix.
- Moderately dense windbreaks are appropriate for erosion control, crop protection, snow moisture harvest or for boundary delineation. This lesser density can be achieved by greater within-row spacing, or minimizing the use of conifers or shrubs.
- Setback distances are critical, especially for windbreaks protecting livestock, building sites, and roads.



Photo: NDFS

Windbreak too close to house

- Maximize the number of species, especially native species, within the planting to maintain effectiveness through drought, blizzards, insects, and disease.

Select an appropriate site and perform effective site preparation.

- When possible select sites where trees and shrubs would naturally occur.
- Match the appropriate tree and shrub species to the specific soils at the site.
- Prepare an adequate seedbed. One to two years of fallow may be needed before planting trees or shrubs on sites with established soddy grasses.

Handle stock carefully and plant properly.

- Do not bruise stock or allow the roots to dry out.
- Do not soak stock in water for more than a few hours.
- Do not plant in dry soil without supplemental water.
- Plant so the top root is no deeper than 1 inch below the soil surface.
- Ensure firm root soil contact without air pockets.

Maintaining windbreaks

- From spring to August maintain a 4-foot diameter weed-free zone around each plant.
- Avoid mechanical or herbicide damage to new plants.
- During the first three years, add water when soil at the plant, one inch below the surface, is not moist to touch.
- Replant stock that dies to maintain windbreak continuity.
- Consider adding additional rows to maintain effectiveness over time.
- Annually inspect for disease, insect, animal, and storm damage.
- Prune or treat as necessary to correct problems.



Healthy multi-species, multi-row windbreak

Additional resources

The following list of online resources provides links to some of the documents that will help you determine an appropriate design to meet a specific purpose on a particular site. Additionally, these sources provide specific instruction on how to perform the design, installation and maintenance necessary for a successful planting.

http://efotg.nrcs.usda.gov/references/public/ND/380_Standard.pdf

http://efotg.sc.egov.usda.gov/references/public/ND/380_specs.pdf

http://efotg.nrcs.usda.gov/references/public/ND/Tree_Care_and_Management.pdf

http://efotg.nrcs.usda.gov/references/public/ND/Tree_and_Shrub_Characteristics.pdf

http://efotg.sc.egov.usda.gov/references/public/ND/Expected_20-Year_Tree_Heights_windbreak_suitability_group_descriptions.pdf

Additional documents are available online and from local offices of the North Dakota State University Cooperative Extension Service and the North Dakota Forest Service.

Where to get help: Contact your local NRCS or Soil Conservation District (SCD) office for a site-specific plan.