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Managing Established Windbreaks



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Windbreaks, also called shelterbelts, are critical for living in the northern Great Plains. They provide valuable protection for farmsteads, roads, communities, crops and livestock. These small pieces of forest in the broader prairie environment even provide habitat for certain wildlife species.

Although windbreaks don't last forever, they are long-term investments and can increase or decrease in value based on our own management decisions. This publication offers some tips on what to do and what to avoid to get the most out of your windbreak.

How Windbreaks Work

Shelterbelts slow the wind and redirect air flow, modifying the microclimate and environment in protected areas. What is important to remember is that windbreaks function as a complete unit; we must see the forest more than any individual tree.

The amount and location of the protected area are based on windbreak structure. Structure has seven components: density, length, height, continuity, orientation, species and the number of rows.

Managing Competition and, Therefore, Water

Weeds, water and fabric

Water is the most limiting factor for establishing trees in North Dakota. Reducing plant competition is one of the biggest goals in windbreak management. Available water should be focused on the trees, not weeds.

Weed-barrier fabric

Weed-barrier fabrics have been critical in windbreak establishment since the 1990s. Tree survival increases dramatically when fabric is used. These products provide weed control for a few years, allowing tree establishment, and then we assume that the fabric will break down.

However, this does not always happen and weed barrier fabric eventually may girdle (choke) trees. To prevent this, annually checking trees to make sure weed barrier fabric isn't girdling trees is critical. Additionally, the fabric may have been buried through time, so you might need to dig down a few inches to reach the fabric (Figure 1).



Figure 1. Weed barrier fabric girdling the tree trunk. (Photo courtesy of Susan Muske, LaMoure County Soil Conservation District)

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Grass or other cover

Although ground cover can compete with trees for soil moisture, it also can provide protection for soil and trees. Maintaining cover may provide a good balance among minimizing competition for moisture, protecting the soil surface and providing optimum soil structure for more moisture absorption and retention (Figure 2). Establishing more drought-resistant cover species that use less water also can help minimize competition with trees and reduce weed establishment.

Herbicides

Herbicides can provide good control of weeds, leaving extra moisture for the trees. However, herbicides must be used appropriately to avoid damage to trees. Herbicides that kill broadleaf weeds also may kill broadleaf trees (Figure 3) and occasionally may harm conifers. Make sure you always read herbicide labels for recommended application rates, buffer zones and compatible tree species.

Pruning - Why and Why Not

When done properly, pruning can provide a number of benefits to individual trees and even windbreaks. When done poorly, pruning can shorten the life of the tree or impair the overall function of the windbreak.

The primary goal for pruning an ornamental tree is to develop good structure. In windbreaks, pruning is usually not necessary because the branches provide additional windbreak density and, therefore, increased protection.

If you do decide to prune trees in your windbreak, don't remove more than about 25% of the leaves/branches from any individual tree in a given year. Removing more than this amount will stress the trees and make them more susceptible to insect and disease pests.

The exception to this is rejuvenation of deciduous shrubs, which involves cutting the entire plant down to about 4 to 6 inches above the ground. Deciduous shrubs will sprout back to more than half their original height in the first year following this treatment. Some examples of deciduous shrubs that respond well to rejuvenation are common lilac, dogwood, willows and caragana.

Tree Health vs. Forest Health and Windbreak Evaluation

A properly functioning windbreak needs healthy trees. However, not every tree needs to be completely healthy and even a few dead trees are OK, as long as the overall forest is providing the protection that's required.

Keep in mind that shelterbelts take time to become established to fully serve their purpose; be proactive when planning for the future. If a windbreak isn't functioning properly, it may need some type of renovation. Usually this involves removing or adding trees/rows, or some other technique that increases or decreases density.

For information on windbreak renovation or establishment, contact your local Soil Conservation District office or the North Dakota Forest Service. These organizations can do an evaluation of the windbreak and discuss options for renovation, including potential opportunities for cost-share.



Figure 2. Well established grass cover between tree rows. (Penny Nester, NDSU Extension, Kidder County)



Figure 3. Herbicide damage caused during control of lawn weeds. (Penny Nester, NDSU Extension, Kidder County)

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