Stanger Trees, Inc.

"Improving the Environment Tree by Tree"

Evergreens Planting and Care

Planting

Step:

1. Dig hole a foot wider and slightly deeper than the root ball of the tree. Back fill the hole with soil and firm to an elevation to allow the top of the ball to be set level to 1" higher than the surrounding ground. When planting in wet heavy clay soils set ball 3" higher. **Note: Never plant the ball lower than surrounding ground.**

2. Once the tree is straighten and positioned in the center of the hole, backfill the hole 1/2 to 3/4 full with soil. Apply water until the backfill soil is fully saturated. This will firmly settle the soil around the ball and remove air pockets. Allow adequate time for the water to soak into the soil before proceeding.

3. Remove all roping and fold the wire ears down along the ball. Cut or roll back the burlap from the top of the root ball. The wire basket should remain on the ball. **Note: Step 3 can be completed before step 2. Completing Step 2 first holds the tree in position while removing roping and folding back wire ears.**

4. Backfill around the remaining portion of the root ball using the same soil as removed from the hole. Tamp lightly and water plant thoroughly to remove air pockets from the soil. If you do not have irrigation and will be watering by hand you may want to build a ring of soil around 3 inches high around the outside of the hole. **Note: If planting into extremely sandy or heavy clay soils you may want to mix the existing soil with 1/2 topsoil to provide better media to encourage root growth. Other special provisit6ons may be required for planting into wet heavy clay soils.**

Mulching

Mulches can conserve soil moisture, reduce soil temperature extremes, help control weeds and lend a pleasing appearance to the ground beneath evergreens. To be effective, most mulch materials should be 2-4 inches deep around the plant.

Organic mulches, such as shredded bark and chips, have the advantage of being natural in appearance while adding organic matter to the soil as they decompose. Some inorganic material that are suitable include: Crushed stone, gravel chips and pebbles.

Figure 1

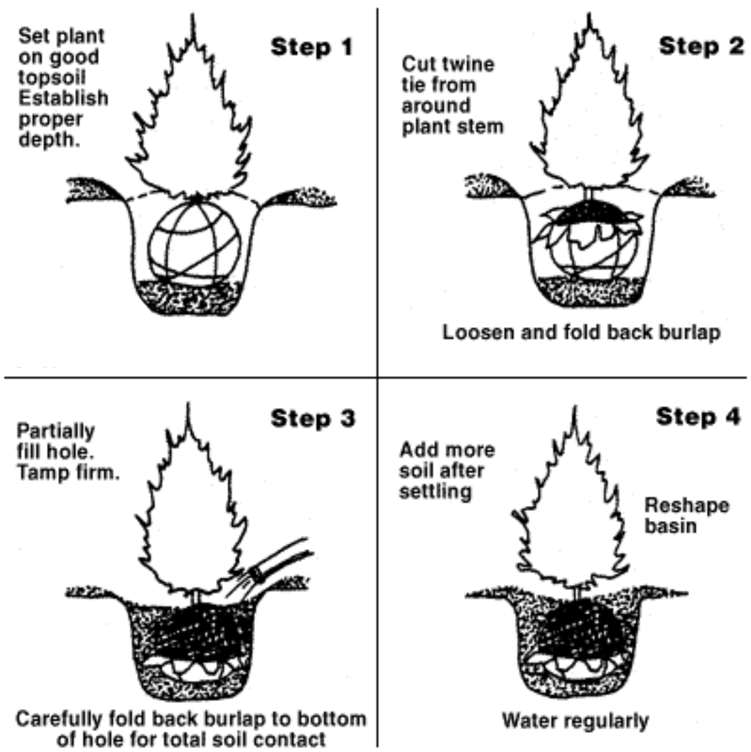

Figure 1. Four steps to plant a ball and burlapped evergreen. (Ronald C. Smith, Dale E. Herman - NDSU)

Watering

Water newly planted evergreens regularly during the first year after planting and into the second year during drought conditions. Watering rates should be equivalent to approximately on inch of rainfall per week. Heavy clay soils may require less and extremely sandy soils more. Monitor natural rainfall and moisture conditions and water as needed. Examine the soil moisture 4-8 inches deep to determine the need for water. If the soil feels dry or just slightly damp, watering is needed. **Note: More plants are killed by over watering than under watering.**

Water the ground around the evergreens thoroughly in November before the soil freezes to help prevent "winter burn" injury.

Fertilizing

Evergreen trees appear to require lower rates of nutrients than deciduous trees and shrubs. Over fertilizing conifer trees leads to open growth with widely spaced branches. Narrow-leaved evergreens generally need only enough fertilizer to maintain good foliage color. Many growers find it not necessary to fertilize evergreens especially after the trees have reached desirable height.

Fertilizing should be completed early spring or late fall. One university recommends applying a high-nitrogen commercial fertilizer such as 12-6-4, 16-8-8 or 20-10-5 at the rate of 1/3 pound per foot of height or spread of the tree, whichever is greater. Water well after applying the fertilizer. **Note: Slow-release fertilizer will yield a longer period of release and are safer to use than quick-release farm grade fertilizers. Some sources do not recommend fertilizing at the time of planting because the fertilizer may "burn" the newly developing roots.**

Broadleaved evergreens, such as arborvitae's, have shallow root system which are easily burned by highly concentrated chemical fertilizers. These plants need an acid soil pH for efficient nutrient uptake. Consult you local garden center.

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LIVING SNOW FENCE

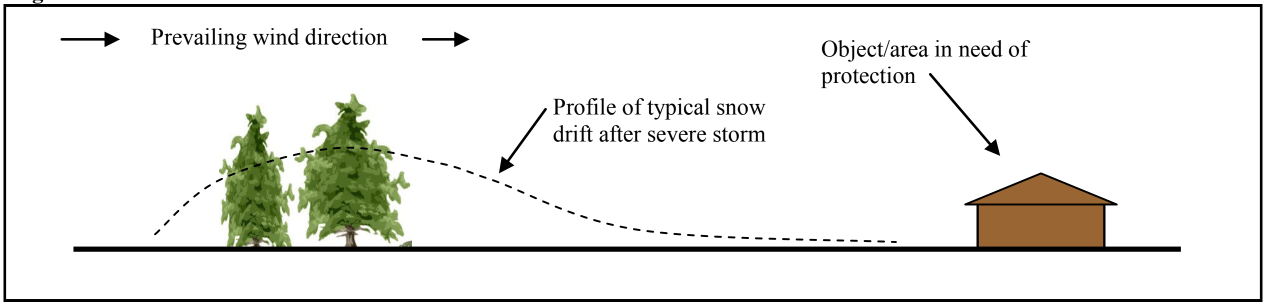
In situations where the goal of snow management is to confine the snow to a limited area, establishing a dense planning of trees and/or shrubs can be a cost-effective method of controlling blowing snow. A properly designed planting provides economic advantages over slat-fence barriers and provide additional benefits. Living snow fences have greater snow storage capacity, require less maintenance once they are established, and have a longer life span.

Living Snow Fence Characteristics

Effect of Height

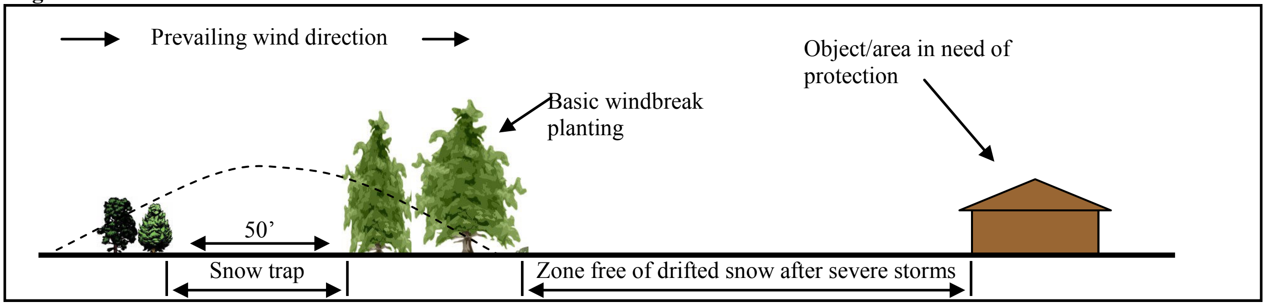
The height of the living snow fence is an important factor in determining snow storing capacity downwind. In major storms, short (3-5 ft.), vertical slat fences reach their snow-storing capacity quickly. Wind driven snow then sweeps across the saturated barrier causing drifting in unwanted areas, such as driveways and around the home. The height of the living snow fence should be designed to deposit snow in designated areas and provide the required storage capacity. Snow storage capacity increases four times when height is doubled.

Figure A



Basic windbreak consisting of two rows of conifer trees

Figure B



In areas with heavy snow, shrubs can be placed 50' to the windbreak side.

Effect of Density

A living snow fence achieves optimum snow storage capacity when the density of the planting is about 50 to 60 percent. As density increases, drifts become deeper and shorter. If the distance between the snow fence and area to be protected is limited. Higher density may be required.

Effect of Orientation

A living snow fence should be located perpendicular to prevailing winter winds and be placed so that the area to be protected is located on the leeward side of the planting. In Indiana, the prevailing wind is from the north and west. The design of each living snow fence is unique, thus the orientation depends on site conditions and landowner objectives. If not properly designed, drifting in unwanted areas could increase causing additional problems.

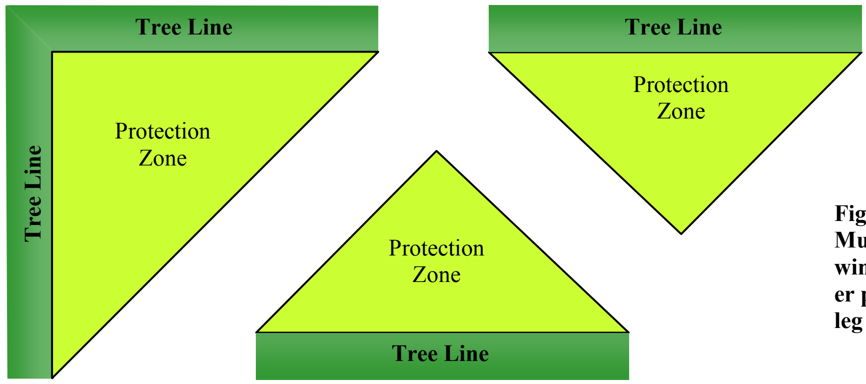


Figure 3
Multiple leg or extended windbreaks provide greater protection than single leg windbreaks.

Other Benefits

A living snow fence can be designed to also, **improve aesthetics, increase property value, provide privacy, screen unwanted views, provide a energy saving windbreak and provide wildlife habitat.**

NOISE BARRIER

Noise is a common problem in both urban and rural areas, traffic noise in particular. Where space permits, trees and shrubs can make effective noise barriers and at the same time be visually attractive. The results of research on the effectiveness of tree and shrub barriers vary but in some cases, noise can be reduced by six decibels (db) over a distance of 30 yards where the planting is dense. Where adequate space is available, a belt of trees and shrubs between 15 and 30 yards wide can reduce the sound level by as much as 10 decibels. Research has indicated the reduction of noise can be further enhanced when trees and shrubs are established on a mound of soil

Design and Planning Considerations

- Noise is more effectively reduced by completely screening the source from view. Gaps in a barrier still allow noise to penetrate.
- A noise barrier should be planted as close to the noise source as possible.
- Widely spaced trees do not reduce noise effectively. Wide belts and high densities are needed for significant noise reduction.
- Effectiveness is closely related to the density of stems, branches and leaves. Use trees with dense foliage and branches that reach close to the ground. Plant an under-storey of dense shrubs or a broad-leaved evergreen.
- For year-round noise screening, use broad-leaved evergreens or a combination of conifers.
- The ground, grasses and mulches are efficient noise absorbers. Thus, trees and shrubs planted on a mound of soil and seeded to grass or mulched increases the effectiveness of the barrier.

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WINDBREAK FOR WINTER SAVINGS

A Well designed windbreak can significantly alter the microclimate around a home, resulting in a more comfortable environment and significant savings in heating and cooling costs over time.

Winter winds increase the rate of air exchange between the interior and exterior of a house, lowering the house's interior temperature and thereby increasing the heating demand. In a windy site, research has indicated a 10-25% reduction in heating fuel consumption. Actual energy savings is influence by several factors: (1) How well the home is insulated, (2) Air tightness of the home, (3) Number, dimensions and placement of windows, (4) efficiency of home heating unit, and (5) how open is the area to the prevailing wind.

Windbreak Characteristics

Effect of Height

Windbreak height (H) is the most important factor determining the downwind area protected by a windbreak. This value varies from windbreak to windbreak, and increases as the windbreak matures. The maximum zone of wind reductions occurs at 5-7 times the height of the windbreak. Height is determined by species selected to meet your individual situation. For greatest protection the downwind edge of the windbreak should be 1.5 X plant height from the house.

Effect of Density

Windbreak density is the ratio of the solid portion of the barrier to the area of the barrier. Wind flows through the open portions of a windbreak, thus the more solid a windbreak is, the less wind that passes through. Density is determined by the tree species selected and number of rows within the windbreak. Properly designed the windbreak will provide the necessary density for your individual situation.

Open Wind Speed 20 mph
Conifer 40-60% Density

H distance from windbreak	5H	10H	15H	20H	30H
Miles per hour	6	10	12	15	19
% of open wind speed	30%	50%	60%	75%	95%

Open Wind Speed 20 mph
Multi Row 60-80% Density

H distance from windbreak	5H	10H	15H	20H	30H
Miles per hour	5	7	13	17	19
% of open wind speed	25%	35%	65%	85%	95%

Open Wind Speed 20 mph
Solid Fence 100% Density

H distance from windbreak	5H	10H	15H	20H	30H
Miles per hour	5	14	18	19	20
% of open wind speed	25%	70%	90%	95%	100%

Figure 1. Wind speed reductions to the lee of windbreaks with different densities.

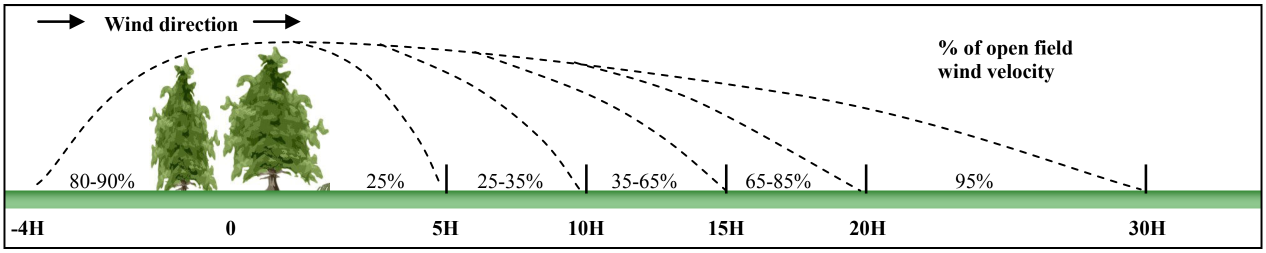

Figure 2. Multi-Row wind barrier, 60-80% density.

Effect of Orientation

Windbreaks are most effective when oriented at right angles to prevailing winds, which in the Indiana area is to the north and west. The purpose and design of each windbreak is unique, thus the orientation of individual windbreaks depends on the design objectives. Each windbreak needs to be specifically designed for your situation.

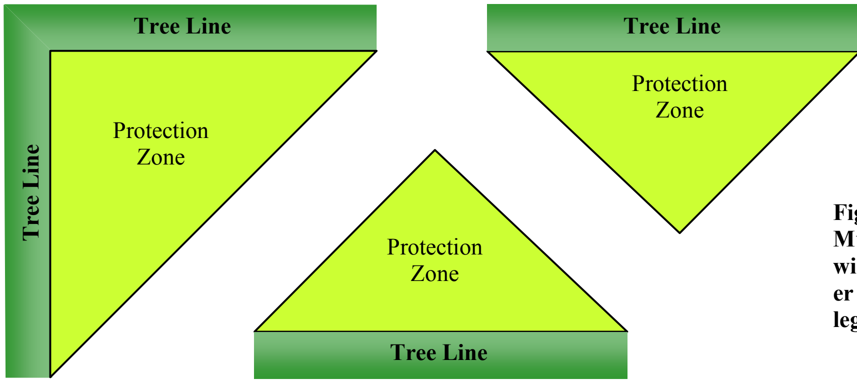

Figure 3
Multiple leg or extended windbreaks provide greater protection than single leg windbreaks.

Effect of Length

While the height of a windbreak determines the extent of the protected area downwind, the length of a windbreak determines the amount of total area receiving protection. The windbreak should extend 50 feet beyond the area to be protected to receive maximum benefit and reduce the turbulence whipping around the ends of the row.

Effect of Shape

Windbreak cross-sectional shape provides some modest differences in protection. Vertical-side windbreaks (tallest trees on the upwind side) provide a modest increase in area protection. Windbreaks arranged in a stair-step pattern (shortest tree on the upwind and tallest on downwind) provide greater efficiency in lifting winds and less dumping and swirling in the protected zone.

Other Benefits

Improve aesthetics/Increase Property Values—Windbreaks do not have to be designed in the traditional straight rows. On the house side the design can be creative with color, texture and location of plants which blends in with the home landscape. Additional benefits could be: providing privacy, screen unwanted views, reduce snow drifting, and provide wildlife habitat.

Planning Considerations

- **The location that the windbreak will be most effective**
- **Do you have enough space for a windbreak? How many rows can you plant to get the greatest benefit?**
- **What species best adapt to the area and your situation? Growth Rate, density, etc.**
- **Is there irrigation or other water sources available for establishing and maintaining the new planting?**
- **Will the trees create a problem when they reach their mature size?**
- **Is snow drifting in and around the house a concern?**
- **Is there potentially adverse affects to neighbors, utilities, streets and roads?**