

WINDBREAK OUTLINE LECTURE NOTES

Master Gardener Program

CONSIDERATIONS BEFORE PLANTING

Wind flows, microclimates, human comfort levels provide the basic requirements to effect changes in the landscape. Landscaping and building placement can promote energy conservation. They can lower the requirement for energy in both residential and commercial applications.

The modification of winter wind flows combined with wind chill reduction help improve the efficiency of building and improve habitat for livestock and wildlife. The temperature reduction of summer sun from strategic locations greatly improves the energy budget of buildings and sites. These same elements are beneficial to winter applications as well

The need for a wind break:

- Animals survive better if protected from the wind.
- Many plants grow in WY climate only when protected from winds
- Windbreaks allow bees to fly on more days
- Reduced wind damage to homes, barns painted surfaces, roofs...

Helps control snow deposits and reduces snow drifting Snow Management (Living Snow Fence) height and destiny determine how much snow can be stored in the system
Puts snow in desired locations

- Eliminating excessive heat loss caused by wind
- Working conditions around buildings are more comfortable
- Wildlife can find food and shelter in a windbreak.
- Add aesthetic value to property.

Winter Winds
Summer Winds
Heat Exchange in Houses

Site Micro Climates
Site Selection
Structure Orientation

DESIGN AND LOCATION

Several characteristics determine the effectiveness of a windbreak. These include height, density, direction and distance from windbreak to the area needing protection.

Height and density are the major factors determining the protection a windbreak gives. A windbreak gives good protection downwind for a distance equal to 7 to 10 times its height

A good windbreak has one or more rows of tall trees to extend the protected zone

A windbreak should have 60 to 75% density of plant material, too dense vs. too thin. Poor density near the ground level reduces the value of the windbreak even it is thicker above

Windbreaks should be planted on sides of property facing prevailing winds (north and west).

Maximum distance for a windbreak is 300 feet from a structure. Optimum distance is 125 to 150 feet between the break and buildings to be protected

Plant spacing should be 10 feet on center. 16 to 20 feet between rows.

In areas of high winds and blowing snow, windbreaks can reduce the amount of effort spent on snow management. Most snow will be deposited in the windbreak and within the first 100 feet inside it. The height and density of the snow fence or windbreak will determine how much snow can be stored in the system. Should be located perpendicular to prevailing winter winds. A low-density windbreak will spread snow across the protected area, provide additional moisture for fields and rangelands. Helps reduce spring runoff.

ENERGY SAVINGS

Possible to reduce heating of homes by 10-25%, 40% reduction through NDSU has been documented. Cooling savings when a few trees are near buildings

TYPES OF TREES AND SHRUBS

PREPARING THE GROUND.

PLANTING

CARE OF THE WINDBREAK, irrigation started mid May and discontinued mid -August, Thinning of trees planted to close together, too close their growth is slowed.