



WINDBREAKS

TOP 10 REASONS FOR PLANTING WINDBREAKS

Putting Conservation on the Ground

1. **Improved Energy Conservation.** Properly planted and maintained windbreaks can reduce winter home heating costs by 10 to 40 percent.
2. **Better Crop Yields.** Crop production on the lee side of wind breaks can run from 5 to 45% higher. Crops that are planted out to 10 times the height of the wind break experience less moisture stress and therefore produce better than crops that are grown without the protection of a windbreak.
3. **Less Soil Erosion.** Windbreaks have a noticeable effect on reduced wind blown soil erosion on the lee side. The effect can be observed on an area up to 10 times the height of the windbreak.
4. **Improved Livestock Performance.** Beef cattle use more energy as wind chill temperatures drop. Their energy requirements increase 13% for each 10° F drop in temperature below 30°F. If the ambient temperature is 30° F with a 25 mph wind the cattle will experience a wind chill temperature of -29°F. A windbreak would reduce the herds energy requirements by up to 50%.
5. **Snowdrift Control.** Windbreaks can be designed to reduce snowdrifts in areas such as roads, driveways and structures, resulting in reduced plowing costs and hazards.
6. **Improved Wildlife Habitat.** Most windbreaks provide some food & shelter for wildlife. Properly selected species can provide food and shelter to numerous local species of birds and mammals.
7. **Increased Home Value.** The added value windbreaks provide real estate values is well known.
8. **Future Revenue Potential.** If the windbreak includes timber species or other economic crops, there may be future revenue potential.
9. **Agricultural Spray Barriers.** Windbreaks can be designed to provide protection for environmentally sensitive areas such as streams from pesticide drift.
10. **Financial and Technical Assistance is Available for Windbreaks.** Numerous government programs are available to landowners installing windbreaks. They include Wildlife Habitat Improvement Program (WHIP), Stewardship Incentive Program (SIP), and Environmental Quality Incentive Program (EQIP). These are USDA programs that provide cost-sharing and technical assistance.

Washington Association of Conservation Districts
Plant Materials Center

16564 Bradley Road, Bow, WA 98232
Phone: 360-757-1094 / email: wacd@ncia.com

Windbreak Design:

Careful planning is essential in windbreak design so benefits are maximized, while post-planting maintenance is minimized. Knowledge of prevalent wind direction is essential in windbreak placement. Windbreaks are most effective when oriented perpendicular to the prevailing wind. The windbreak should be placed approximately 100 to 150 feet away from structures being shielded by it. It should extend 50 to 100 feet past these areas to prevent winds from whipping around the flanks of the windbreak, reducing its intended effects.

Windbreaks that are planted with multiple rows of plants are more effective than single row windbreaks. A windbreak with 5 rows is optimal. Windbreaks consisting of fewer rows can be effective also if properly designed. These are a few design options for windbreaks of differing numbers of rows:

5 Rows: The 1st row (windward side) should be composed of **dense shrubs** (see species list).
The 2nd row should be composed of **medium deciduous shrubs**.
The 3rd row should be composed of **tall deciduous trees**.
The 4th row should include **tall evergreen trees**.
The 5th row should be composed of **medium sized evergreens**.

4 Rows: The 1st row (windward side) should be composed of **dense shrubs**.
The 2nd row should be composed of **medium sized evergreens**.
The 3rd row should include **tall evergreen trees**.
The 4th row should be composed of **medium sized evergreens**.

3 Rows: The 1st row (windward side) should be composed of **dense shrubs**.
The 2nd row should include **tall evergreen trees**.
The 3rd row should be composed of **medium sized evergreens**.

2 Rows: The 1st row should be composed of **medium sized evergreens**.
The 2nd row should include **tall evergreen trees**.

1 Row: The 1st row should be composed of **tall evergreen trees**.

The spacing between plants in the windbreak should range from 5 feet apart for the smaller dense shrubs to 15 feet apart for the larger trees.

Windbreak Maintenance:

The better a windbreak is maintained the sooner it will reach an effective size with minimal plant loss. Windbreak maintenance essentially consists of weed control and irrigation. The most effective method of weed control begins with cultivating the area prior to planting, followed by the installation of weed barrier cloth around the plants after planting. Heavy mulching can be used in addition to, or in place of, weed barrier cloth. After that, any weeds that appear in and around the windbreak should be controlled by cultivating or herbicides. Irrigation practices can range from hauling buckets of water to the plants to installing drip irrigation. These practices may sound expensive, but the results will be an effective windbreak sooner. A well maintained windbreak may reach an effective size in 3 to 4 years instead of 7 to 8 years or longer for an unmaintained windbreak. Other required maintenance may include fencing for livestock exclusion, herbivore control (deer, mice, voles ,etc.), and any pest and disease management necessary.

Windbreak Species List

Dense Shrubs

	<u>Size</u>	<u>Distribution</u>
Golden Currant	4 - 6'	Eastern Washington
Mock Orange	6 - 10'	Eastern Washington
Red Osier Dogwood	6 - 15'	Eastern and Western Washington
Rugosa Rose	4 - 6'	Non-native
Russet Buffaloberry	6 - 8'	Eastern Washington
Silver Buffaloberry	6 - 8'	Eastern Washington
Snowberry	4 - 6'	Eastern and Western Washington
Woods Rose	6 - 8'	Eastern Washington

Medium-sized Deciduous Shrubs

Black Cherry	40 - 50'	Non-native
Black Hawthorn	15 - 20'	Eastern and Western Washington
Blue Elderberry	10 - 15'	Eastern and Western Washington
Choke cherry	15 - 20'	Eastern Washington
Serviceberry	15 - 20'	Eastern and Western Washington
Water Birch	15 - 20'	Eastern Washington
Vine Maple	15 - 20'	Eastern and Western Washington

Tall Deciduous Trees

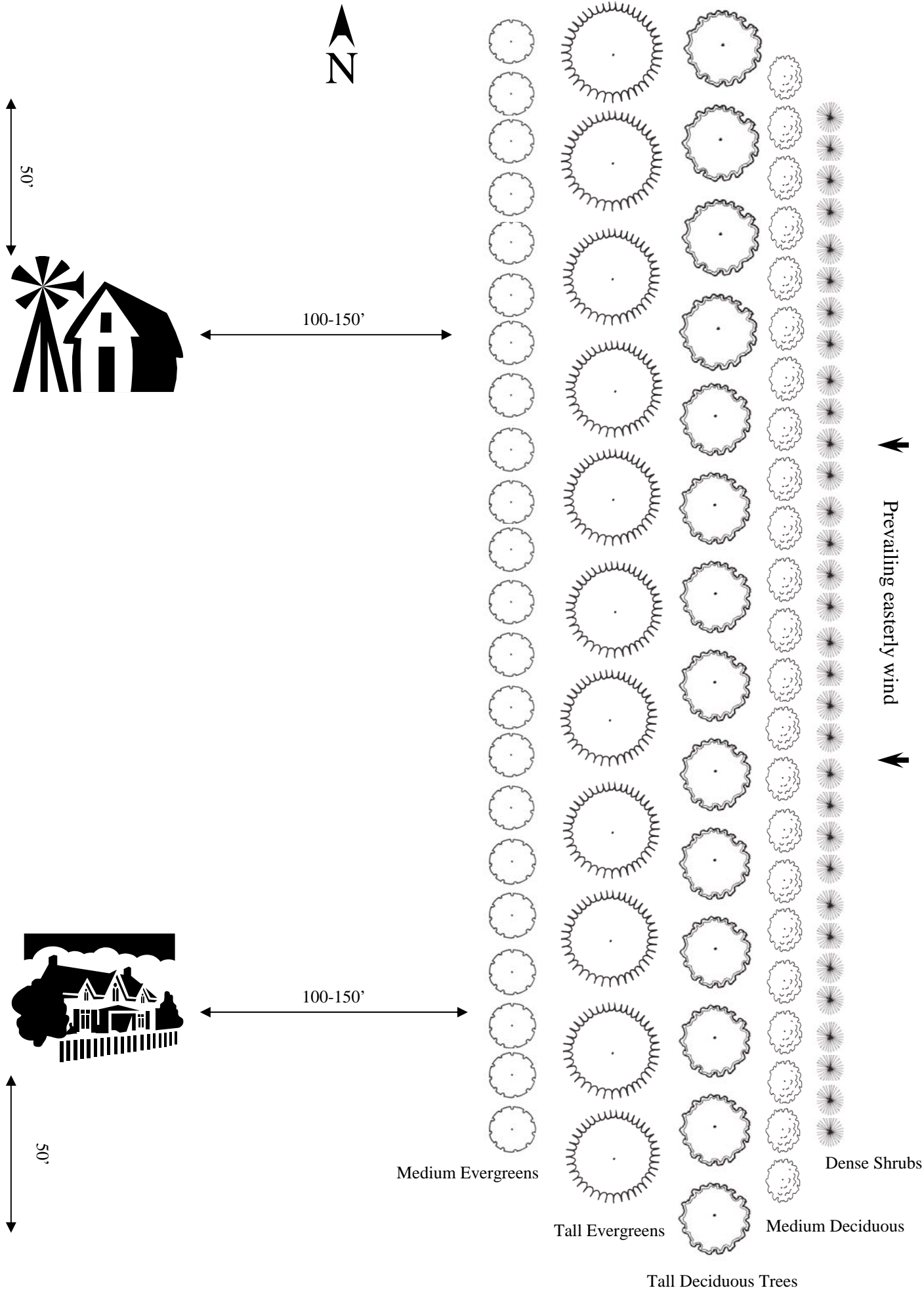
Black Cottonwood	60 - 80'	Eastern and Western Washington
Hybrid Cottonwood	60 - 80'	Non-native
Paper Birch	60 - 80'	Eastern and Western Washington
Quaking Aspen	40 - 60'	Eastern and Western Washington
Red Alder	40 - 60'	Western Washington
Rocky Mt. Maple	30 - 40'	Eastern and Western Washington
Sugar Maple	60 - 80'	Non-native

Medium-sized Evergreens

Austrian Pine	40 - 60'	Non-native
Colorado Spruce	50 - 60'	Non-native
Rocky Mountain Juniper	20 - 30'	Eastern Washington

Tall Evergreens

Douglas Fir	60 - 80'	Eastern and Western Washington
Grand Fir	100'+	Eastern and Western Washington
Ponderosa Pine	80'+	Eastern Washington
Western Red Cedar	80'+	Eastern and Western Washington
Western White Pine	80'+	Eastern Washington



Prevailing easterly wind