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## WIND CONTROL

### . . . and Landscape Plantings

The large volumes of air moving above the surface of the earth can create conditions that are pleasing, uncomfortable, or destructive depending on such factors as season and velocity.

Wind may be deflected, obstructed, intercepted, or reduced by obstructions or windbreaks such as buildings, walls, fences, earth forms, and plants. When such a barrier interrupts an airstream, the wind flows around, over, or through the barrier and eventually returns to the original flow pattern. The weather on the lee (away from the wind direction) side of a hill or other obstruction is quieter than on the weather or windward side. Also, the movement of the wind is about 20 percent greater at the top of a hill or other obstruction than on the slope.

A pierced screen or baffle effect that permits about 50 percent wind penetration is considered more effective than a solid barrier by providing a longer distance of protection on the leeward side. Consequently, such things as buildings, gardens, and crops in that location have a greater area of protection. Also, the distribution of snow drifting covers a greater area with less depth than a solid obstacle - an important concern near structures or roadways. Wind in front of a baffle is controlled or reduced for a distance of two to five times the height of the barrier and from ten to fifteen times the height for the leeward side of the windbreak.

Coniferous or narrow-leaf evergreens that branch low to the ground are more effective for winter and year-round control. Deciduous plants are more effective for summer wind control. Windbreaks should be placed at right angles to the seasonal prevailing wind to be controlled. Also, plantings should be planned to follow the contour levels in areas of rolling terrain for uniformity of control.

Space is increasingly a problem in congested areas of structures and facilities. Even for a one row windbreak planting, a width of ten to twelve feet is needed. However, with extremes of limited space, vines on a support or a board-on-board fence can be utilized for reducing the flow of wind. A two row staggered planting, if space permits, is usually more effective than a single row of plants. Protective shelter crops for sun or wind on the windward side are recommended for the first three to five years establishment period. Such a planting can be annual crops such as a five or six foot row of sudan grass, sweet corn, pole beans, or similar protective crops. Of course, such temporary crops should not be permitted to become competitive for moisture and nutrients. Weed control and moisture conservation should be continuous during the first few years of establishment.

Soil preparation prior to plantings should consist of testing for and applying deficient nutrients or fertility. Hard compacted soil types should be broken to a depth of six to fifteen inches by plowing or preferably subsoiling. Late summer preparation is recommended, followed by a winter cover crop and late winter (February to early April) to early spring plantings for the permanent plant materials.

For the late winter to early spring plantings, slightly smaller than average plantings stock is recommended. An example: Native Red Cedar (*Juniperus virginiana*) of a 2-1/2 feet to 3 feet height.

The selection of plant materials should be based on local adaptation. An effective windbreak may sometimes require that common concerns for such things as beauty and esthetic value be sacrificed for dependability. However, with imaginative, sound planning, several landscape functions can be incorporated in a wind control development.

Some emphasis factors:

Total areas such as housing communities, shopping centers, industrial sites and others could profit from the use of windbreaks, especially when space problems for smaller individual units prevail.

Solid rows of evergreens next to a wall can create a dead air space and consequently an insulating effect.

Seasonal wind control can be planned since winter winds and summer breezes are predominantly from different prevailing directions.

Plants control or modify wind currents by obstruction, guidance, deflection, and filtration. Placement for effectiveness is important. Wind is controlled for a distance of two to five times the height of a barrier in front and ten to fifteen times the height on the leeward (away from the wind) side.

The most effective density for a windbreak is fifty to sixty percent. Such a degree of penetration is more efficient than a solid wall effect.

Windbreaks should extend beyond the width of the area to be protected.

Narrow windbreaks permit distribution of snow over a wider area than wide windbreaks (more than two rows of plants).

Windbreaks can serve several functional landscape purposes.

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