

## Control of Wind Erosion

Wind erosion is a menace to the land. It causes loss of fertility, loss of organic matter, reduced water holding capacity and a change in surface soil texture. It creates ridges on the land, fills ditches and pollutes the air. It is a menace to the farmer and to the rest of society as well and it can be prevented.

Best known for its devastating effects on the prairies, it is no stranger to British Columbia either. Although much less prevalent than on the prairies, it does play havoc with the soil in some areas of British Columbia. Particularly sensitive are fine sandy and silty soils which dry out readily, as well as the well decomposed organic soils which are light and easily picked up by wind when dry and finely granulated.

### CONTROL MEASURES

Soil covered with vegetation does not blow away. It is when vegetation has been removed in common cultivation practices used for the production of annual crops and some clean cultivated row crops that wind can get a grip on the soil. Providing the soil with as much vegetative cover as possible is, therefore, the simplest and most effective way of controlling wind erosion.

Sometimes it is not possible to have a vegetative cover and other measures must be used. A short description of some of the measures that control wind erosion is provided here.

#### 1. Permanent Soil Cover

Perennial grasses and legumes cover the soil densely and provide the best long-term protection against wind erosion. Most common use of this type

of soil cover is as pasture or hay. Grasses and legumes can also be used in combination with other crops such as tree fruits and some berry crops.

#### 2. Cover Crops

Cover crops are crops grown for the purpose of providing a cover for the soil during periods when regular crops are not present. They are seeded soon after the main crop is taken off the land. Before the next main crop is planted, cover crops may be worked into the soil or they may be harvested. Not only do the cover crops provide protection to an otherwise bare soil, they also inhibit weed growth and add organic matter to the soil when they are worked into the soil.

Oats and barley cereal crops are particularly well suited for late summer planting. Fall planting where slow winter growth and rapid spring growth are desirable can be achieved through the use of fall rye or winter wheat. Other desirable cover crop species include annual ryegrass, and some legumes such as red clover.

#### 3. Strip Cropping

Vegetative cover grown in strips between cultivated crops and across prevailing wind direction is an effective way of reducing soil erosion. Any vegetative cover is of benefit, but taller and denser stands are more effective slowing air movement. Grasses, legumes and cereals are excellent crops for this purpose. Rows of small fruit or ornamental bushes or trees (fruiting or ornamental) are more effective than low growing plants.

#### 4. Crop Residue

Roots and stems of a crop left on and attached to the soil after harvesting anchor the soil and reduce wind erosion. Crop residue and stubble create a layer of slower moving air at the soil surface so the wind does not have the energy to lift soil particles and begin the erosion process. It is recommended that plowing or tilling in the fall in areas prone to erosion be avoided unless a cover crop can become established prior to the winter. Any plant residues left in the field is a benefit in controlling erosion. Residue also protects the soil from the harmful effects of raindrop impact and can reduce the negative impacts of freeze-thaw. Organic matter also stimulates soil organisms and enriches the soil organic matter pool.

#### 5. Minimum Tillage

Tillage disturbs the natural soil structure and breaks down soil aggregates. Since small soil particles are least resistant to wind erosion it follows that tillage must be avoided or kept to a minimum. In particular, rotary tiller used at high speed can pulverize the soil making it susceptible to wind erosion. Frequent disking and any other operation that leaves the soil finely granulated at high risk times is an invitation to wind erosion and must be avoided.

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#### 6. Shelterbelts

Barriers placed in the path of prevailing winds reduce wind speed and thus reduce wind erosion. Hedgerows of trees and shrubs are particularly effective for this purpose. They should be planted with a range of species to obtain a range of heights, densities and level of leaf/branch cover that remains relatively high through out the year. Shelterbelts allow some airflow which eliminates the unwanted turbulence that occurs behind solid barriers.

Although some yield reduction may occur to crops immediately adjacent to shelterbelts, research has shown that there is an actual overall increase in yield to crops that are grown in fields protected by shelterbelts.

#### 7. Fences

An alternative to shelterbelts which can be used both in permanent and temporary installations. The key to an effective wind fence is that it must have between 30 and 50% porosity. This porosity allows some air to pass through the structure and slow down.

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