

Wind Erosion

Wind erosion is the process of detachment, movement and deposition of soil by the action of wind. It can occur on any soil type, but is more common on sandy soils and particularly organic or muck soils.

Your soil is suffering from wind erosion if:

- airborne soil is regularly seen under windy conditions
- during winter, the snow cover has a brown colour
- soil has accumulated on the leeward side of any type of barrier, e.g. fence rows, buildings, trees, ditches or streams
- fence rows may be much higher than the field border
- the soil surface appears smooth or rippled, like beach sand
- crops have been exposed, sandblasted or buried by soil.



Airborne soil particles above muck cropland.



The crops in this field have been sandblasted and partially covered by wind-blown sands.



Look for soil-covered snow in winter months as evidence of wind erosion in the off-season.

BMPs for Wind Erosion

Isolated areas within a field, such as sandy knolls

There are two main approaches to controlling wind erosion:

- reduce wind speed at ground level
- cover and protect the soil surface.

SOLUTION

No-till or **mulch till** in isolated high-risk areas may be enough to hold the soil, particularly over winter. Another option is to use a **cover crop**. If the area is very prone to erosion, consider a cover crop that overwinters, like wheat or rye.



Conservation tillage protects the soil surface from wind erosion with crop residue.



In many intensive vegetable production systems, plastic mulch covers much of the soil. While the mulch protects the soil from wind erosion, it can increase water erosion problems.



Cover crops such as red clover under-seeded in wheat keep the field protected.

BMPs for Wind Erosion

Large areas of the field or whole fields

Rye, wheat or spring grain can be planted as annual windstrips. Windstrips will provide adequate wind protection if spaced properly. Grasses bend under pressure of the wind, which reduces the effective protected area. Consider the height of the grasses when protection is needed, and use a factor of 5–7 times the height of the upright grasses to estimate the protected area. This concept is explained on the next page.

SOLUTION

Tillage systems that leave **residue on the field** and **cover crops** to protect the soil over the winter are a must on fields that experience high levels of erosion. Spring tillage and planting pose a greater risk for wind erosion. Use **windstrips** to reduce wind speed and carrying capacity.



Windstrips provide flexible wind protection for high-value land. They can also be used either in combination with windbreaks or as a transitional measure until tree windbreaks are large enough to provide sufficient protection.



Muck soils are much more erodible than sandy soils. Barley can be planted between rows of onions or carrots to provide early season wind erosion control. The barley can be controlled by herbicides so that it doesn't compete with the crop.



Cover crops such as rye, wheat and oats can be used to create windstrips for crop protection.

BMPs for Wind Erosion

Windbreaks



“For every 10 feet in height of a tree windbreak, you will see an increase in yield for approximately four to five times that – 40 to 50 feet – into the field.”

Earl Elgie, Kent County



BMPs for Wind Erosion

Entire field or farm

SOLUTION

- Plant tree **windbreaks** along fence rows.
- Complement with tillage systems that leave **residue** on the field.
- Use **cover crops** that protect the soil when not in crop.



Effective wind erosion control management may include tree windbreaks and a variety of other approaches. As little as 20–30% crop residue cover can be highly effective in protecting soil from wind erosion.



The use of plastic mulch during planting will reduce the need for weed control during the first five years.



A successful windbreak tree planting project requires maintenance: occasional pruning, in-filling dead trees, thinning as trees mature, and watering young trees during prolonged drought conditions.