



KNOW SOIL KNOW LIFE



WIND EROSION AND BEST MANAGEMENT PRACTICES

What is Wind Erosion?

Wind erosion occurs when soil particles are detached, transported, and deposited by the wind. These soil particles may or may not leave the field or area from which they were eroded. Kinetic energy is the primary force in wind erosion. There are three types of wind erosion: surface creep, saltation, and suspension.

When the wind speed at the soil surface exceeds 21 kilometers per hour (about 13 miles per hour), sand particles begin to creep, or roll, along the surface. As the wind speed increases, sand particles begin to “jump” off the soil surface and into the air, which is saltation. The relatively large particles fall back to the surface. Driven by the wind, they gain kinetic energy. When they hit the surface, they dislodge other particles, knocking them into the air. These include smaller sand particles, as well as silt and clay. These particles can be lifted high into the atmosphere, which is suspension. Suspended particles can be transported long distances until the wind speed decreases enough that the particles drop and are deposited.

The effects of wind erosion were most dramatically illustrated by the Dust Bowl of the 1930s, possibly the worst environmental disaster in the history of the United States.


Wind erosion is common in many deserts that do not have vegetation to protect the soil surface. Some deserts have stone pavements on the surface because all the finer particles have been removed by wind erosion. Soil particles eroded from the Sahara desert are actually carried across the Atlantic and deposited in the Caribbean Islands and northern South America, increasing the fertility of those fragile, weathered tropical soils.

Controlling Wind Erosion

The main principles for controlling wind erosion are similar to those for controlling water erosion: protect the surface and reduce the energy. Best management practices include:

- A covered surface protects soil from wind erosion; crop residues and growing plants reduce wind speed at the surface.
- Minimum and no-till systems also limit wind erosion - for example, sweep plows and sandfighters (special implements designed for that purpose) rough up the soil surface, creating turbulence and decreasing wind speed at the surface.
- Tillage is a short-term solution, however; in sandy soils, the next rain will smooth the surface again.
- Windbreak plantings are commonly used around country homes, livestock facilities, and businesses but have little impact on agricultural land, since they only decrease wind speed for a distance of about 10 times the height of the trees in the windbreak.

Best management practices (BMPs) are any of a group of practices that help conserve soil and water resources. BMPs are proven to reduce erosion and pollution and improve water and environmental quality.



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