

## Resource Concerns

# Sheet, Rill and Wind Erosion

### Soil

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##### Concentrated Flow Erosion

##### Shoreline, Bank and Channel Erosion

#### Soil Quality Degradation

### Water

### Air

### Plants

### Animals

### Energy

## Soil Erosion - Sheet, Rill and Wind Erosion

Detachment and transportation of soil particles caused by rainfall runoff/splash, irrigation runoff, or wind that degrades soil quality.

### What is it?

Wind or water erosion is the physical wearing of the earth's surface. Erosion is not always readily visible, even when soil loss exceeds unsustainable levels. Symptoms of soil erosion by water may be identified by small rills and channels on the soil surface, soil deposited at the base of slopes, sediment in streams, lakes, and reservoirs, and pedestals of soil supporting pebbles and plant material. Water erosion is most obvious on steep, convex landscape positions. Symptoms of wind erosion may be identified by dust clouds, soil accumulation along fence lines or snowbanks, and a drifted appearance of the soil surface.

### Why is it important?

Erosion removes surface soil material (topsoil), reduces levels of soil organic matter, and contributes to the breakdown of soil structure. This creates a less favorable environment for plant growth. Loss of only 1/32 of an inch can represent a 5 ton/acre soil loss. In soils that have restrictions to root growth, erosion decreases rooting depth, which decreases the amount of water, air, and nutrients available to plants. Erosion removes surface soil, which often has the highest biological activity and greatest amount of soil organic matter. Nutrients removed by erosion are no longer available to support plant growth on-site, and when they accumulate in water, algal blooms, lake eutrophication, and high dissolved oxygen levels can occur. Deposition of eroded materials can obstruct roadways and fill drainage channels. Blowing dust can affect human health and create public safety hazards.

### What can be done about it?

Soil erosion can be avoided by maintaining a protective cover on the soil and modifying the landscape to control runoff amounts and rates. To avoid water erosion, include high residue, perennial, and sod crops in the cropping system, grow cover crops, manage crop residues, and shorten the length and steepness of slopes. To avoid wind erosion, keep soil covered with plants or residue, plant windbreaks, use stripcropping, increase surface roughness, cultivate on the contour, and maintain soil aggregates at a size less likely to be carried by wind.

## Sheet, Rill and Wind Erosion at a Glance

Problems / Indicators - Changes in soil horizon thickness, soil deposition in fields and water, and decreased organic matter	
Causes	Solutions
<ul style="list-style-type: none"> <li>Bare or unprotected soil</li> <li>Long and steep slopes</li> <li>Intense rainfall or irrigation events when residue cover is at a minimum</li> <li>Decreased infiltration by compaction</li> </ul>	<ul style="list-style-type: none"> <li>Residue management</li> <li>Crop rotations</li> <li>Cover crops</li> <li>Terraces</li> <li>Contour farming</li> <li>Stripcropping</li> <li>Windbreaks</li> <li>Herbaceous wind barrier</li> </ul>