

## Chapter 9 : Glossary of Commonly Used Terms in Wind Erosion and Natural Resources Conservation

Term	Definition
A factor	The computed longtime average annual soil loss carried by runoff from specific field slopes in specified cropping and management systems. It is expressed in the Revised Universal Soil Loss Equation-2 (RUSLE2) model in tons/acre/year.
Abrasion	Breakdown of clods, crusts, and plant material by the impact of particles moved by wind in saltation. The impacting particles may also abrade. Abrasion causes soil aggregates to break down progressively as wind erosion continues.
Accelerated erosion	Erosion of soil resulting from disturbance of the natural landscape. It results largely from the consequences of human activity, such as tillage, grazing, and removal of vegetative cover.
Adsorption	The process by which atoms, molecules, or ions are taken up from the soil solution or soil atmosphere and retained on the surfaces of solids by chemical or physical binding. <sup>200</sup>
Aeolian	Processes relating to or arising from the action of the wind. <sup>201</sup>
Aerodynamic equivalent diameter	The diameter of a unit density sphere having the same settling velocity (due to gravity) as the particle of interest of whatever shape and density. <sup>202</sup>
Aggregate stability	The ability of a soil aggregate to resist various destructive forces, such as tillage, abrasion by wind or flowing water, or raindrop force.
Aggregation, soil	The cementing or binding together of primary soil particles (sand, silt, and clay) into a secondary unit, which unit contributes to the soil structure.
Agronomic rate	The rate at which fertilizers, organic wastes or other amendments can be added to soils for optimum plant growth.
Air-dry weight	Weight of a substance after it has been allowed to dry to equilibrium with the atmosphere.
Allelopathy	Production of a substance by one organism that inhibits one or more other organisms.
Amendment	A substance added to the soil to improve plant growth, such as lime.
Angle of deviation	The angle between prevailing wind erosion direction and a line perpendicular to: (1) the long side of the field or strip, when determining unsheltered distance using a wind erosion direction factor, or (2) row direction when determining effect of wind direction on the ridge roughness factor.
Available water holding capacity	The capacity of a soil to hold water in a form available to plants, usually expressed in inches of water per inch of soil depth. Commonly defined as the amount of water held between field capacity and wilting point.
Avalanching	The increase in rate of soil flow with distance downwind across an area being eroded by wind.
Biochemical oxygen demand (BOD)	The amount of oxygen required by aerobic organisms to carry out oxidative metabolism in water containing organic matter, such as sewage. BOD is used as an indirect measure of the concentration of biologically degradable material present in organic wastes. Also known as Biological Oxygen Demand.

Biomass	The total mass of living organisms in a given volume or mass of soil, or in a particular environment.
Buffer strip	A narrow strip of grass or other close-growing vegetation that, when placed along the contour on a slope, traps sediment that was produced on the hillslope above.
Bulk density, soil	The mass of dry soil per unit bulk volume. The value is expressed as Mg per cubic meter, $\text{Mg m}^{-3}$ .
C factor—Water erosion	Cover and management factor in Revised Universal Soil Loss Equation (RUSLE). It combines the effects of prior land use, crop canopy, surface cover, surface roughness, and soil moisture to predict a soil loss ratio for a crop or other vegetation, cropping period, or season.
C factor—Wind erosion	Climatic factor in Wind Erosion Equation (WEQ). It is an index of climatic erosivity, specifically wind speed and surface soil moisture. The factor for any given location is based on long-term climatic data and is expressed as a percentage of the C factor for Garden City, KS, which has been assigned a value of 100.
Calcareous soil	Soil containing sufficient free calcium carbonate or magnesium carbonate to effervesce visibly when treated with cold 0.1 N hydrochloric acid.
	High content of lime (up to about 5 percent), particularly in the clay fraction, appreciably increases erodibility by wind.
Calcium carbonate equivalent	The content of carbonate in a liming material or calcareous soil calculated as if all of the carbonate is in the form of $\text{CaCO}_3$ . See also Lime, agricultural.
Canopy	The vertical projection downward of the aerial portion of plants, usually expressed as percent of ground so occupied.
Carbon cycle	The sequence of transformations whereby carbon dioxide is converted to organic forms by photosynthesis or chemosynthesis, recycled through the biosphere (with partial incorporation into sediments), and ultimately returned to its original state through respiration or combustion.
Carbonaceous compounds	Compounds that contain carbon.
Carbon-nitrogen ratio (C:N)	The ratio of the mass of organic carbon to the mass of organic nitrogen in soil, organic material, plants, or microbial cells.
Cation exchange capacity	The sum of exchangeable bases plus total soil acidity at a specific pH values, usually 7.0 or 8.0. It is usually expressed in centimoles of charge per kilogram of exchanger ( $\text{cmolc kg}^{-1}$ ) or millimoles of charge per kilogram of exchanger.
Climatic erosivity	The relative influence of climate on field erodibility by wind in different regions, specifically the effects of average wind speed and effective soil surface moisture.
Clod	A compact, coherent mass of soil greater than 2 millimeters in equivalent diameter, often created by tillage or other mechanical disturbance of the soil.
Coarse fragments	Rock or mineral particles greater than 2 millimeters in diameter.
Compost	Organic residues, or a mixture of organic residues and soil, that have been mixed, piled, and moistened, with or without addition of fertilizer and lime, and generally allowed to undergo thermophilic decomposition until the original organic materials have been substantially altered or decomposed.
Contour farming	The practice of using ridges and furrows left by tillage to redirect runoff from a path directly downslope to a path around the hillslope.

Cover crop	Close-growing crop that provides soil protection, seeding protection and soil improvement between periods of normal crop production, or between trees in orchards and vines in vineyards. When incorporated into the soil, cover crops may be referred to as green manure crops.
Creep processes	See Surface creep.
Critical wind erosion period	Period of the year when the greatest amount of wind erosion can be expected to occur from a field under an identified management system. It is the period when the combination of vegetative cover, soil surface conditions, and expected erosive winds result in the greatest potential for wind erosion.
Crop furrow	A trench that is formed by a plow to construct the crop bed and commonly used to irrigate the crop.
Crop residue management	Maintaining stubble, stalks, and other crop residue on the soil surface or partially incorporated into the surface layer to reduce erosion, conserve soil moisture, and improve soil tilth.
Crop rotation	A planned sequence of several different crops grown on the same land in successive years or seasons, done to replenish the soil, reduce insect, weed and disease populations, or to provide adequate feedstocks for live- stock operations.
Crop tolerance to wind erosion	Ability of crop plants to tolerate wind-blown soil particles when in the seedling stage or exposure of plant roots where soil is eroded away, or burial of plants by drifting soil, or desiccation and twisting of plants by the wind.
Crust	A thin surface layer, where aggregates are bound together and the surface is sealed. It is more compact and mechanically stable than the soil material immediately beneath it. Crust is characterized by its dense, platy structure that becomes less distinct with depth until it merges with the soil below. Crust is a transitory condition.
Deposition	The accumulation of eroded soil material on the land surface when the velocity of the transporting agent (wind or water) is reduced.
Desert pavement	A non-erodible soil surface devoid of erodible materials or consisting of gravel or stones left on the land surface. It occurs in desert regions as a result of the removal of fine materials by wind or water erosion.
Detachment	The removal of transportable fragments of soil material from the soil mass by an eroding agent, usually falling raindrops, running water, wind, or windblown soil particles. Detachment is the process that makes soil particles or aggregates available for transport.
Drag partition scheme	A scheme used to represent surface roughness effects on wind erosion <sup>203</sup> - especially the absorption of wind momentum and sheltering of the soil surface by vegetation and other non-erodible roughness.
Drought year	Any year when precipitation is less than 80 percent of the long-term normal.
Dry aggregate	A compound or secondary air-dry soil particle that is not destroyed by dry sieving.
Dryland farming	Crop production without irrigation (rainfed agriculture).
Dust deposition	The settling of dust particles to the land surface under the force of gravity or in rainfall. <sup>201</sup>
Dust emission	The entrainment of fine soil particles and aggregates (dust), typically regarded as being smaller than 62.5 $\mu\text{m}$ in diameter (e.g., silt and clays). <sup>201</sup>
Dust storm	A strong turbulent wind carrying large amounts of soil particles in suspension.

E tables	Tables derived from computer solutions (WEROs) of the Wind Erosion Equation that display values of average annual wind erosion per acre (E) for various combinations of soil erodibility (I), ridge roughness (K), climate (C), unsheltered distance (L), and vegetative cover (V).
Effective precipitation	That portion of the total rainfall precipitation which becomes available for plant growth.
Electrical conductivity (ECe)	The electrical conductance of an extract from a soil saturated with distilled water, normally expressed in units of siemens or decisiemens per meter at 25 °C.
Entrainment (soil)	To lift and transport (soil grains) by the flow of a fluid (the wind). <sup>201</sup>
Entrainment threshold	The threshold shear velocity required for particle movement to occur. <sup>204–206</sup>
Erodibility	The susceptibility of soil to erode. Soils with low erodibility include fine textured soils high in clay that are resistant to detachment, and coarse textured soils high in sand that have low runoff. Soils having a high silt content are highly susceptible to erosion. The K factor in Revised Universal Soil Loss Equation (RUSLE) expresses the erodibility of soil.
Erosive wind energy	The capacity of winds above the threshold velocity to cause erosion. Erosive wind energy is a function of the cube of wind speed and the duration of erosive winds.
Erosivity	The energy (amount) and intensity of rainstorms that cause soil to erode. Erosivity includes the effects of raindrop impact on the soil and the amount and rate of runoff likely to be associated with the rain.
Eutrophication	A process that increases the amount of nutrients, especially nitrogen and phosphorus, in a marine or aquatic ecosystem. Eutrophication occurs naturally over geological time but may be accelerated by human activities, such as waste disposal or land drainage, leading to an increase in algae and a decrease in diversity.
Evapotranspiration	The combined loss of water from a given area, and during a specified period of time, by evaporation from the soil surface and by transpiration from plants.
Fallow	The practice of leaving land uncropped, either weed-free or with volunteer vegetation, during at least one period when a crop would normally be grown; done to control weeds, or accumulate water or available plant nutrients.
Fertility, soil	The quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants or crops.
Fertilizer	Any organic or inorganic material of natural or synthetic origin (other than liming materials) that is added to a soil to supply one or more plant nutrients essential to the growth of plants.
Fertilizer analysis	The percent composition of a fertilizer as determined in a laboratory and expressed as total N, available phosphoric acid (P <sub>2</sub> O <sub>5</sub> ) equivalent, and water-soluble potash (K <sub>2</sub> O) equivalent.
Fibric organic soil materials	The least decomposed of all the organic soil materials containing very high amounts of fiber that are well preserved and readily identifiable as to botanical origin.
Field capacity (Field water capacity)	The content of water, on a mass or volume basis, remaining in a soil two to three days after being saturated with water, and from which free drainage is negligible. <sup>200</sup>

Friable	A term describing soils that when either wet or dry can be easily crumbled between the fingers.
Geologic erosion	The wearing away of the Earth's surface by the forces of water and wind. Sometimes referred to as natural erosion, it is responsible for the natural topographic cycles, as it wears away higher points of elevation and constructs valleys and alluvial plains.
Green manure crop	Any crop grown for soil improvement by being incorporated into the soil while green or soon after maturity.
Greenhouse effect	The absorption of solar radiant energy by the Earth's surface and its release as heat into the atmosphere; longer infrared heat waves are absorbed by the air, principally by carbon dioxide and water vapor, thus, the atmosphere traps heat much as does the glass in a greenhouse.
Groundwater	That portion of the water below the surface of the ground at a pressure equal to or greater than atmospheric. See also Water table.
Gully erosion, Classical	Erosion caused by the action of runoff water in concentrated flow channels.
Gully erosion, Ephemeral	Erosion that occurs from the action of runoff water which concentrates in shallow flow channels when rills converge. These flow channels are alternately filled with soil by tillage operations and reformed in the same general location by subsequent runoff events.
Hard seed	Seed that is dormant due to a seed coat impervious to either water or oxygen.
Hemic organic soil materials	Intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric materials.
Hydraulic conductivity	The ease at which water flows through pore spaces and fractures.
Hydrologic cycle	The fate of water from the time of precipitation until the water has been returned to the atmosphere by evaporation and is again ready to be precipitated.
Hydromulcher	Specialized equipment for spraying hydromulch (a slurry of water, fiber mulch, tackifier, and sometimes seed and fertilizer) consisting of a 1,000 to 3,000 gallon tank mounted on a truck or trailer that is equipped with a special pump and continuous agitation system. <sup>207</sup>
Hydroseeding	Planting seed in a water mixture by pumping through a nozzle that sprays the mixture onto a seedbed. The water mixture may also contain addends such as fertilizer and mulches.
Inertial impaction	The deposition of large aerosol particles on the walls of an airway conduit. The impaction tends to occur where the airway direction changes. <sup>208</sup>
Inoculate	To treat, usually seeds, with microorganisms to create a favorable response. Most often refers to the treatment of legume seeds with Rhizobium or Bradyrhizobium to stimulate dinitrogen fixation.
Isolated field	A field where the rate of soil flow is zero at the windward edge of the field due to the presence of a stable border. An isolated field is not protected by barriers and is exposed to open wind velocities. The Wind Erosion Equation (WEQ) applies to conditions on an isolated field.
Isoline	A line on a map or chart along which there is a constant value of a variable such as wind velocity or climatic erosivity.
K factor—Water Erosion	Soil erodibility factor in Revised Universal Soil Loss Equation (RUSLE) that quantifies the susceptibility of soil particles to detachment and movement by water. The K value is the soil loss rate per erosion index unit for a specified soil

	as measured on a standard plot, which is defined as a 72.6-foot length of uniform 9 percent slope in continuous clean-tilled fallow.
K factor—Wind Erosion	The soil roughness factor K, for Wind Erosion Equation (WEQ). It is a measure of the effect of oriented roughness (ridges) and random roughness (cloddiness) on erosion. See Random roughness and Ridge roughness.
Knoll	An abrupt change in topography characterized by windward slope change greater than 3 percent and windward slope less than 500 feet long.
Knoll erodibility	The increase in wind erosion potential resulting from the compression of wind flowlines and accompanying increased velocity over the crest of knolls. A knoll erodibility factor is used to adjust estimated erosion where these conditions occur.
Land capability	The suitability of land for use without permanent damage. Land capability, as ordinarily used in the USA, is an expression of the effect of physical land conditions, including climate, on the total suitability for use, without damage, for crops that require regular tillage, for grazing, for woodland, and for wildlife. Land capability involves consideration of the risks of land damage from erosion and other causes and the difficulties in land use owing to physical land characteristics, including climate.
Land capability class	One of the eight classes of land in the land capability classification of NRCS; distinguished according to the risk of land damage or the difficulty of land use; they include:
	Land suitable for cultivation and other uses
	Class I—Soils that have few limitations restricting their use.
	Class II—Soils that have some limitations, reducing the choice of plants or requiring moderate conservation practices.
	Class III—Soils that have severe limitations that reduce the choice of plants or require special conservation practices, or both.
	Class IV—Soils that have very severe limitations that restrict the choice of plants, require very careful management or both.
	Class V—Soils that have little or no erosion hazard, but that have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife food and cover.
	Land generally not suitable for cultivation (without major treatment) Class VI—Soils that have severe limitations that make them generally unsuited for cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.
	Class VII—Soils that have very severe limitations that make them unsuited to cultivation and that restricts their use largely to grazing, woodland, or wildlife.
Class VIII—Soils and landforms that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply, or aesthetic purposes.	
Leaching	The removal of soluble materials from one zone in soil to another via water movement in the profile.
Leeward	The side facing away from wind. <sup>209</sup>
Liebig's Law	The growth and reproduction of an organism is dependent on the nutrient substance that is available in minimum quantity.

Lime, agricultural	A soil amendment containing calcium carbonate, magnesium carbonate and other materials, used to neutralize soil acidity and furnish calcium and magnesium for plant growth. Classification, including calcium carbonate equivalent and limits in lime particle size, is usually prescribed by law or regulation.
Loess soil	Material transported and deposited by wind, consisting predominantly of silt-sized particles.
LS factor	The Revised Universal Soil Loss Equation (RUSLE) factor that accounts for the combined effects of length and steepness of slope on soil loss. The factor value represents the ratio of soil loss on a given slope length and steepness to soil loss from a slope that has a length of 72.6 feet and a steepness of 9 percent, where all other conditions are the same.
Management period	A period of time during a cropping sequence when cover and management effects are approximately uniform or otherwise result in uniform rates of erosion during the period.
Mineral soil	A soil composed mainly of, and having its properties determined by, mineral matter, with less than 20 percent organic matter. Compare Organic soil.
Mineralization	The conversion of an element from an organic form to an inorganic state as a result of microbial activity.
Moldboard plow	A plow with a large curved metal blade designed to invert the soil as it plows.
Mulch	Any material such as straw, sawdust, leaves, plastic film, loose soil, or similar material that is spread or formed upon the surface of the soil to protect the soil and/or plant roots from the effects of raindrops, soil crusting, freezing, evaporation, etc.
Mulch tillage	Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting. <sup>210</sup>
Net primary production	Net primary production is the rate at which all the plants in an ecosystem produce net useful chemical energy. <sup>211</sup>
Nitrogen cycle	The continuous process by which nitrogen circulates among the air, soil, water, plants, and animals of the earth. Nitrogen in the atmosphere is converted by bacteria into forms that green plants can absorb from the soil; animals eat these plants (or eat other animals that feed on the plants); the animals and plants die and decay; the nitrogenous substances in the decomposed organic matter return to the atmosphere and the soil.
Northwestern Wheat and Range Region (NWRR)	Areas of non-irrigated cropland in the Pacific Northwest and mountainous regions of the west. It includes portions of eastern Washington, north central Oregon, northern and southeastern Idaho, western Montana, western Wyoming, northern Utah and northern California. Rainfall and erosion processes in this region are dominated by winter events.
No-till/Strip till	Managing the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops in narrow slots, or tilled or residue free strips in soil previously untilled by full-width inversion implement.
Noxious	Harmful or poisonous.

Organic farming	A crop production system that reduces, avoids or largely excludes the used of synthetically-produced fertilizers, pesticides, growth regulators and livestock feed additives.
Organic soil	A soil that contains a high percentage (greater than 20 percent) of organic matter throughout the solum. Compare Mineral soil.
Oven-dry weight	The weight of a substance after it has been dried in an oven at 105 °C, to equilibrium.
P factor	The support practice factor in Revised Universal Soil Loss Equation (RUSLE). It is a measure of the soil loss with a specific support practice to the corresponding loss with upslope and downslope tillage. On cultivated land, support practices considered in Revised Universal Soil Loss Equation (RUSLE) include contouring, stripcropping, buffer strips, and terraces. These practices principally affect erosion by modifying the flow pattern, grade or direction of surface runoff and by reducing the amount and rate of runoff.
Particulate matter (PM)	Solid and liquid particles in the air, comprising the particulate portion of aerosols. PM <sub>10</sub> particles have an aerodynamic diameter <10 µm and may be inhalable. <sup>201</sup>
Perennial plant	A plant that lives more than two years. <sup>212</sup>
Permanent wilting point (Wilting coefficient)	The largest water content of a soil at which indicator plants, growing in that soil, wilt and fail to recover when placed in a humid chamber. Often estimated by the soil water content at -1.5 Mpa (-15 bars) soil matric potential.
Permeability	The ease with which water, air, or plant roots penetrate or pass through a soil horizon.
Polypropylene	A tough and rigid, crystalline thermoplastic produced from propene (or propylene) monomer <sup>213</sup> commonly used as a mulching material for trees and other crops.
Precipitation effectiveness (P-E) index	An index of the effectiveness of precipitation, calculated from mean monthly precipitation and mean monthly temperature at a specific geographical location. A modified P-E index is used to represent effective surface soil moisture in calculation of the Wind Erosion Equation (WEQ) climatic factor C.
Preponderance	A ratio which expresses how much of the erosive wind energy occurs parallel to the prevailing wind erosion direction, as compared to the amount of erosive wind energy occurring perpendicular to the prevailing direction. A preponderance of 1.0 indicates that as much wind erosion force occurs perpendicular to the prevailing direction as occurs parallel to that direction. A higher preponderance indicates more of the force is parallel to the prevailing wind erosion direction.
Prevailing wind direction	The direction from which winds most commonly occur. This may not be the same as the prevailing wind erosion direction.
Prevailing wind erosion direction	The direction of erosive winds where there is potential for the greatest amount of soil to be moved, relative to the erosive force of winds from other directions.
Pure live seed	Percentage of pure germinating seed: (pure seed percentage × germination percentage)/100.
R equivalent (Req) factor	The factor used in place of the Revised Universal Soil Loss Equation (RUSLE) R factor in the Northwestern Wheat and Range Region of the United States to measure the unique effects of melting snow, rain on snow, and/or rain on



	thawing soil. Much of this soil loss occurs by rilling when the surface part of the soil profile thaws and snowmelt or rain occurs on the still partially frozen soil.
R factor	The rainfall and runoff factor in Revised Universal Soil Loss Equation (RUSLE) that accounts for the energy and intensity of rainstorms. It is a measure of total storm energy times the maximum 30-minute intensity.
Random roughness	The standard deviation of the soil surface elevations when changes because land slope or nonrandom (oriented) tillage marks are removed from consideration. Roughness ponds water in small localized depressions and reduces erosivity of raindrop impact and surface water flow.
Reference condition	A standard wind tunnel condition for small grain equivalent determination where small grain stalks 10 inches long are lying flat on the soil surface in 10-inch rows which are perpendicular to the wind direction, with stalks oriented parallel to the wind direction.
Relative field erodibility	An index of relative erodibility under field conditions. Wind tunnel erodibility is adjusted for the effect of unsheltered distance and of the resistance of soil textural classes to breakdown of surface crusts by abrasion and avalanching. Compared to the wind tunnel, erodibility of a field surface is greater because the longer unsheltered distance allows abrasion and avalanching to occur.
Representative concentration pathway	A greenhouse gas concentration (not emissions) trajectory adopted by the IPCC for its fifth Assessment Report (AR5) in 2014. <sup>214</sup>
Revised Universal Soil Loss Equation version 2 (RUSLE2)	An empirical model that predicts long-term average annual soil loss for a given set of climatic conditions, on a defined land slope, and under a specified cropping and tillage management system. Revised Universal Soil Loss Equation (RUSLE) is an update of the Universal Soil Loss Equation (USLE), and contains a computer program to facilitate calculations.
Rhizobia	Bacteria able to live symbiotically in roots of leguminous plants, from which they receive energy and often utilize molecular nitrogen. Collective common name for the genus <i>Rhizobium</i> .
Ridge roughness	The degree of oriented roughness determined by the height and width of ridges formed by tillage and planting implements. Ridges provide sheltered zones that trap moving soil particles.
Ridge-till	A type of tillage system where a crop is planted on ridges that were created during cultivation of the previous year's crop. The ridges are usually built when the previous crop is about 12 to 18 inches high, and then left to settle. <sup>215</sup> Ridge Till is now considered by NRCS to be a form of Reduced Tillage.
Rill	A small, intermittent water course with steep sides; usually only several centimeters deep.
Rill erosion	The removal of soil by concentrated water running through little streamlets or headcuts. <sup>216</sup>
Root pruning	A cultivation method which involves cutting back long roots on a tree or shrub, used to adjust above- and belowground plant sections by controlling root growth. <sup>217,218</sup> Commonly employed when a windbreak's tree roots intrude into an adjacent cropped field and adversely affect crop growth.
Runoff	That portion of precipitation or irrigation on an area which does not infiltrate, but instead is discharged from the area.

Saline seep	Intermittent or continuous saline water discharge at or near the soil surface under dryland conditions that reduces or eliminates crop growth. It is differentiated from other saline soil conditions by recent and local origin, shallow water table, saturated root zone, and sensitivity to cropping systems and precipitation.
Saline soil	A nonsodic soil containing sufficient soluble salt to adversely affect the growth of most crop plants. The lower limit of saturation extract electrical conductivity of such soils is conventionally set at 4 dS m <sup>-1</sup> (at 25 °C). Actually, sensitive plants are affected at half this salinity and highly tolerant ones at about twice this salinity.
Salt tolerance	The ability of plants to resist the adverse, nonspecific effects of excessive soluble salts in the rooting medium.
Salt-affected soil	Soil that has been adversely modified for the growth of most crop plants by the presence of soluble salts, with or without high amounts of exchangeable sodium.
Saltation	The movement of soil grains and aggregates along the soil surface in a leaping or hopping motion, typically larger than 62.5 μm and within ~1 m of the surface.
Sandblasting	The process of wind-driven soil and sand particles striking plant surfaces, often causing injury to the plant. <sup>219,220</sup>
Sapric organic soil materials	The most highly decomposed of the organic materials, having the highest bulk density, least amount of plant fiber, and lowest water content at saturation.
Seasonally variable K factor	The average annual soil erodibility K factor value that has been adjusted to reflect the temporal variability associated with freezing and thawing or wetting and drying cycles during the year.
Sediment mass flux	The mass of soil grains in saltation and/or suspended in the air (dust) per unit length or area per unit time; often separated into saltation (g m <sup>-1</sup> s <sup>-1</sup> ) and dust (g m <sup>-2</sup> s <sup>-1</sup> ) components. <sup>201</sup>
Sheet erosion	A form of water erosion in which a very thin layer is removed from the soil surface by detachment and overland flow.
Small grain equivalent (SGe)	The wind erosion control equivalent of vegetative cover, compared to a small grain standard. The standard (reference condition) is defined as small grain stalks 10 inches long lying flat on the soil surface in 10-inch rows which are perpendicular to the wind direction, with stalks oriented parallel to the wind direction. The small grain equivalent value is a function of kind, amount, and orientation of growing plants or plant residues on the soil surface.
Sodic condition	A condition with a high concentration of sodium in the cation exchange complex <sup>221</sup> that reduces water infiltration and adversely affects crop growth. Empirically recognized as when the exchangeable sodium percentage is 15 or above.
Soil erodibility index (I)	The potential soil loss, in tons per acre per year, from a wide, level, unsheltered, isolated field with a bare, smooth, loose, and non-crustured surface, under climatic conditions like those in the vicinity of Garden City, Kansas.
Soil loss tolerance (T)	The average annual soil erosion rate (tons/acre/year) that can occur in a field with little or no long-term degradation of the soil resource thus permitting crop productivity to be sustained for an indefinite period of time.
Soil surface moisture	Adsorbed water films surrounding surface soil particles that increase the soil resistance to erosion. In developing the climatic factor, soil surface moisture is

	assumed to be proportional to the Thornthwaite Precipitation-Effectiveness (P-E) Index.
Sorting	The practice of growing two or more crops in alternating strips along contours to control erosion.
Strawblower	A machine designed to chop and distribute straw as mulch. <sup>222</sup>
Strip-till	A combined tillage and planting operation that removes the previous crop's residue on only a very narrow portion of the seed bed to allow soil warming and sun to reach emerging seedlings. <sup>223</sup> Now considered by NRCS to be a form of No-till.
Sulfates	Salts containing the sulfate ion $SO_4^{2-}$ . <sup>224</sup>
Surface armor	A layer of coarse fragments or other non-erodible particles resistant to abrasion that remain on the soil surface after the removal of fine particles by erosion.
Surface creep	Soil movement by wind in which the coarser fractions are transported by rolling and sliding along the ground surface, primarily by the impact of particles in saltation rather than by direct force of the wind. Particles greater than 0.5 mm (0.02 in) in size are usually moved in this manner.
Suspension	Soil movement in wind whereby the finer fractions are transported over long distances floating in the windstream. Suspension is usually initiated by the impact of saltating particles. Particles moving in this manner are usually less than 0.1 mm (0.004 in) in size. Many suspension-size particles are created by abrasion during erosion.
Threshold velocity	The minimum velocity at which wind will begin moving soil particles from a smooth, bare, non-crustured surface. The threshold velocity is usually considered to be 13 mph at 1 foot above the soil surface, or 18 mph at 30 feet height.
Tillage, Conventional	Primary and secondary tillage operations normally performed in preparing a seedbed and/or cultivating for a given crop grown in a given geographical area, usually resulting in little or no crop residues remaining on the surface after completion of the tillage sequence.
Tillage, Inversion	Reversal of vertical order of occurrence of layers of soil, or of the soil within a layer.
Tillage, Non-inversion	Tillage that does not mix (or minimizes the mixing of) soil horizons or does not vertically mix soil within a horizon.
Tillage, Subsoiling	Any treatment to non-inversively loosen soil below the Ap horizon with a minimum of vertical mixing of the soil. Any treatment to fracture and/or shatter soil with narrow tools below the depth of normal tillage without inversion and with a minimum mixing of the soil. This loosening is usually performed by lifting action or other displacement of soil dry enough so that shattering occurs.
Tilth	The physical condition of soil as related to its ease of tillage, fitness as a seedbed, and its impedance to seedling emergence and root penetration.
Total Maximum Daily Load (TMDL)	The maximum quantity of a particular water pollutant that can be discharged into a body of water without violating a water quality standard.
Transport	The movement of detached soil material across the land surface or through the air by wind or running water. Transport of soil particles in wind is by three modes: (1) saltation, (2) suspension, and (3) surface creep.
Transport capacity	The maximum amount of soil material that can be carried by wind or running water under given conditions.

Trap strip	A strip of grass or other erosion-resisting vegetation, planted between cultivated strips or fields and having sufficient width, height, and density to trap and store incoming saltation. Trap strips are usually not tall enough to create significant barrier effects.
Unit plot	A standard plot used to experimentally determine factor values in Universal Soil Loss Equation (USLE) and Revised Universal Soil Loss Equation (RUSLE). It is arbitrarily defined as being 72.6 feet long, with a uniform slope of 9 percent, in continuous fallow, tilled up and down the slope.
Universal Soil Loss Equation (USLE)	An empirical model that predicts long-term average annual soil loss for a given set of climatic conditions, on a defined land slope, and under a specified cropping and tillage management system.
Unsheltered distance	The distance across an erodible field, measured along the prevailing wind erosion direction, beginning at a stable border on the upwind side and continuing downwind to a non-erodible or stable area, or to the downwind edge of the area being evaluated.
Unsheltered field	A field or portion of a field characterized by the absence of windbreaks or barriers and fully exposed to open wind velocity.
Vegetative wind barrier	Narrow strips of annual or perennial vegetation planted at intervals across fields for wind erosion control, snow management, or protection of sensitive crops. Barriers have sufficient height and density to create a sheltered zone downwind. In the protected zone, wind velocities are reduced enough to prevent saltation from beginning. Vegetative barriers may also trap incoming saltation, but this is a secondary function.
Vertical dust flux	The emitted dust mass concentration per unit area per unit time. <sup>225</sup>
Water erosion	The detachment, transport, and deposition of soil particles by rainfall and runoff.
Water infiltration rate	The velocity at which downward-moving water enters the soil. <sup>226</sup>
Water table	The upper surface of ground water or that level in the ground where the water is at atmospheric pressure.
WEROSS	A Fortran IV Program to Solve the Wind-Erosion Equation.
Wide field	Any field with sufficient width to allow the rate of soil flow to reach the maximum that an erosive wind can sustain. This distance is the same for any erosive wind. It varies only and inversely with erodibility of the field surface. That is, the more erodible the surface, the shorter the distance in which maximum flow is reached.
Wind erodibility group	A grouping of soils that have similar properties affecting their resistance to wind erosion.
Wind erosion	The net loss of soil from an area, considered the sum of all saltation and dust emission out of the area (loss) and deposition (gain) of sediment into the area from upwind sources (e.g., $t\ ha^{-1}$ ). <sup>201</sup>
Wind erosion direction factor	A numerical factor used to calculate the equivalent unsheltered distance. The factor accounts for field shape (length/width ratio), field width, preponderance, and angle of deviation of the prevailing wind erosion direction from a line perpendicular to the long side of the field or strip.
Wind erosion equation (WEQ)	An equation used to estimate wind erosion and design wind erosion control systems. $E=(IKCLV)$ where E is the average annual soil loss expressed in tons per acre per year; I is the soil erodibility; K is the soil ridge roughness factor; C is the

	climatic factor; L is the equivalent unsheltered distance across the field along the prevailing wind erosion direction; and V is the equivalent vegetative cover.
Wind Roses	Graphical charts that characterize the speed and direction of winds at a location. <sup>77</sup>
Wind stripcropping	A method of farming whereby erosion-resistant crop strips are alternated with strips of erosion-susceptible crops or fallow. Erosion-resistant strips reduce or eliminate saltation and act as soil traps designed to reduce soil avalanching. Strips are perpendicular or nearly so to the direction of erosive winds.
Wind tunnel	A duct in which experimental situations are created and tested by exposure to air streams under controlled conditions. Both laboratory and portable field wind tunnels are used in wind erosion research.
Windbreak	A living barrier of trees or combination of trees and shrubs designed to reduce wind erosion, conserve energy or moisture, control snow deposition, or provide shelter for livestock or wildlife. When used to control wind erosion, windbreaks deflect wind forces and reduce wind velocity in the downwind sheltered zone below the threshold required for initiation of soil movement.
Yield	The amount of a specified substance produced (e.g., grain, straw, total dry matter) per unit area.