

## GLOSSARY

Term	Definition
<b>active carbon</b>	<i>the portion of total soil organic carbon (matter) that is relatively easily metabolized or utilized by microorganisms.</i>
<b>anaerobic</b>	<i>living without air, as opposed to aerobic.</i>
<b>anion</b>	<i>an ion with more electrons than protons, giving it a net negative charge.</i>
<b>anoxia</b>	<i>areas of sea water, fresh water or groundwater that are depleted of dissolved oxygen. Anoxic conditions are in a general a more severe condition of hypoxia. The US Geological Survey defines anoxic waters as those with dissolved oxygen concentration of less than .5 milligrams per liter.</i>
<b>base saturation</b>	<i>The proportion of acids and bases on the cation exchange complex.</i>
<b>biochar</b>	<i>name for charcoal when it is used for particular purposes, especially as a soil amendment. Biochar, a stable solid, rich in carbon, which can endure in soil for thousands of years, increases soil fertility and agricultural productivity, and provides protection against some foliar and soil-borne diseases.</i>
<b>cation</b>	<i>is an ion with fewer electrons than protons, giving it a positive charge</i>
<b>cation exchange capacity (CEC)</b>	<i>the maximum quantity of total cations, of any class, that a soil is capable of holding, at a given pH value, available for exchange with the soil solution. CEC is used as a measure of fertility, nutrient retention capacity, and the capacity to protect groundwater from cation contamination.</i>
<b>clay</b>	<i>a fine-grained soil that combines one or more clay minerals with traces of metal oxides and organic matter.</i>
<b>compaction</b>	<i>the process in which a stress applied to a soil causes densification as air is displaced from the pores between the soil grains. Normally, compaction is the result of heavy machinery compressing the soil, but it can also occur due to the passage of (e.g.) animal feet.</i>
<b>denitrification</b>	<i>a microbially facilitated process of nitrate reduction (performed by a large group of heterotrophic facultative anaerobic bacteria) that may ultimately produce molecular nitrogen (N<sub>2</sub>) through a series of intermediate gaseous nitrogen oxide products.</i>
<b>dynamic soil quality</b>	<i>those soil qualities that change over relatively short periods of time (months to years) in response to land use or management practice changes. Dynamic properties include organic matter, soil structure, infiltration rate, bulk density, and water and nutrient holding capacity.</i>
<b>erosion</b>	<i>the process by which soil and rock are removed from the Earth's surface by exogenic processes such as wind or water flow, and then transported and deposited in other locations</i>
<b>estuary</b>	<i>a partly enclosed coastal body of brackish water with one or more rivers or streams flowing into it, and with a free connection to the open sea. Estuaries form a transition zone between river environments and maritime environments and are subject to both marine influences, such as tides, waves, and the influx of saline water; and riverine influences, such as flows of fresh water and sediment.</i>
<b>eutrophication</b>	<i>an ecosystem response to the addition of artificial or natural substances, such as nitrates and phosphates, through fertilizers or sewage, to an aquatic system.</i>
<b>evapotranspiration</b>	<i>the sum of evaporation and plant transpiration from the Earth's land and ocean surface to the atmosphere. Evaporation accounts for the movement of water to the air from sources such as the soil, canopy interception, and water bodies. Evapotranspiration is an important part of the water cycle.</i>

<b>fragipan</b>	<i>altered subsurface soil layer &gt; 6 inches (15 cm) depth) that restricts water flow and root penetration</i>
<b>greenhouse gas</b>	<i>a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. The primary greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gases greatly affect the temperature of the Earth.</i>
<b>humus</b>	<i>organic matter that has broken down into a stable substance that resists further decomposition</i>
<b>hydrologic cycle</b>	<i>or water cycle, describes the continuous movement of water on, above and below the surface of the Earth.</i>
<b>hypoxia</b>	<i>or oxygen depletion is a phenomenon that occurs in aquatic environments as dissolved oxygen becomes reduced in concentration to a point where it becomes detrimental to aquatic organisms living in the system.</i>
<b>infiltration</b>	<i>the process by which water on the ground surface enters the soil.</i>
<b>inherent soil quality</b>	<i>those soil qualities that change little, if at all, with land use or management practices, for example: soil texture, depth to bedrock, type of clay, cation exchange capacity, and drainage class</i>
<b>leaching</b>	<i>the loss of water-soluble plant nutrients from the soil.</i>
<b>loam</b>	<i>a soil composed mostly of sand and silt, and a smaller amount of clay (about 40%-40%-20% concentration respectively).</i>
<b>macropores</b>	<i>larger soil pores (greater than 60 micrometers) from which water drains readily by gravity. Macropores are important for soil aeration and good drainage.</i>
<b>micropores</b>	<i>smaller soil pores (less than 60 micrometers) generally found within soil aggregates. Water does not drain freely in micropores</i>
<b>mineralization</b>	<i>the release of plant-available compounds such as ammonium during decomposition</i>
<b>mycorrhizae</b>	<i>a fungus that forms a symbiotic relationship with vascular plants enhancing their ability to take up nutrients and water.</i>
<b>organic matter</b>	<i>matter composed of organic compounds that has come from the remains of once-living organisms such as plants and animals and their waste products in the environment</i>
<b>penetrometer</b>	<i>a device used to measure resistance as it is pushed down into the soil helping to identify compacted layers.</i>
<b>podzol</b>	<i>a typical soil of coniferous or boreal forests, often, but not exclusively occurring in wet, cold climates. Most podzols are poor soils for agriculture due to the sandy portion, resulting in a low level of moisture and nutrients. Some are sandy and excessively drained. Others have shallow rooting zones and poor drainage due to subsoil cementation. A low pH further compounds issues, along with phosphate deficiencies and aluminum toxicity. The best agricultural use of Podzols is for grazing although well-drained loamy types can be very productive for crops if lime and fertilizer are used.</i>
<b>sand</b>	<i>naturally occurring granular material composed of finely divided rock and mineral particles.</i>
<b>sediment</b>	<i>a naturally occurring material that is broken down by processes of weathering and erosion, and is subsequently transported by the action of wind, water, or ice, and/or by the force of gravity acting on the particle itself. Sediments are most often transported by water (fluvial processes), wind (Aeolian processes) and glaciers.</i>
<b>silt</b>	<i>granular material of a size somewhere between sand and clay whose mineral origin is quartz and feldspar.</i>
<b>soil</b>	<i>the unconsolidated mineral or organic material on the immediate surface of the Earth</i>

	<i>that serves as a natural medium for the growth of land plants</i>
<b>soil aggregates</b>	<i>primary soil particles (sand, silt, and clay) held together in a single mass or cluster, such as a crumb, block, or prism or clod using organic matter as cementing material.</i>
<b>soil compaction</b>	<i>the process in which a stress applied to a soil causes densification as air is displaced from the pores between the soil grains.</i>
<b>soil crumb</b>	<i>a unit of aggregated soil that helps provides structure and large pores spaces for free water and air movement.</i>
<b>soil health</b>	<i>the capacity of the soil to function</i>
<b>soil penetrometer</b>	<i>diagnostic tool to measure the extent and depth of subsurface compaction</i>
<b>soil profile</b>	<i>a vertical section of soil from the ground surface to the parent rock showing the different horizons or layers</i>
<b>soil structure</b>	<i>is determined by how individual soil granules clump or bind together and aggregate, and therefore, the arrangement of soil pores between them. Soil structure has a major influence on water and air movement, biological activity, root growth and seedling emergence.</i>
<b>soil texture</b>	<i>the relative portion of sand, silt, and clay in a given amount of soil.</i>
<b>soil tilth</b>	<i>A descriptor of soil combining the properties of particle size, moisture content, degree of aeration, rate of water infiltration, and drainage.</i>
<b>soil type</b>	<i>usually refers to the different sizes of mineral particles that comprise a soil; the largest particles, sand, determine aeration and drainage characteristics, while the tiniest, sub-microscopic clay particles are chemically active, binding with water and plant nutrients. The ratio of these sizes determines soil type: clay, loam, clay-loam, silt-loam, etc.</i>
<b>subsoil</b>	<i>is the layer of soil under the topsoil on the surface of the ground. Like topsoil it is composed of a variable mixture of small particles such as sand, silt and/or clay, but it lacks the organic matter and humus content of topsoil.</i>
<b>subsurface compaction</b>	<i>compaction that occurs below the plow layer due to a surface load; compaction below the normal tillage depth may sometimes remediated by fracturing or cutting.</i>
<b>suppressive soil</b>	<i>a soil in which certain diseases fail to develop because of the presence of soil organisms that are antagonistic to those pathogens.</i>
<b>surface compaction</b>	<i>compaction that occurs in the surface “plow layer”; this type of compaction may be partly alleviated with normal tillage operations</i>
<b>surface runoff</b>	<i>the water flow that occurs when the soil is infiltrated to full capacity and excess water from rain, meltwater, or other sources flows over the land. This is a major component of the water cycle, and the primary agent in water erosion</i>
<b>top soil</b>	<i>is the upper, outermost layer of soil, usually the top 2 inches (5.1 cm) to 8 inches (20 cm). It has the highest concentration of organic matter and microorganisms and is where most of the Earth's biological soil activity occurs.</i>
<b>transpiration</b>	<i>accounts for the movement of water within a plant and the subsequent loss of water as vapor through stomata in its leaves.</i>
<b>volatilization</b>	<i>the process where a dissolved compound is vaporized or made volatile; the process of converting a chemical substance from a liquid or solid state to a gaseous or vapor state</i>