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The Twelve Orders of Soil Taxonomy

Click on each soil order for a high-resolution, printable PDF file. For a high resolution PDF version of the entire poster, click on the title in the center of the poster. (All of these links are also listed below.)

To order a free copy of the poster, go to the NRCS Distribution Center website at <http://nrcspad.sc.egov.usda.gov/DistributionCenter/> and search for "Twelve Orders".


THE TWELVE ORDERS OF SOIL TAXONOMY



ALFISOLS

Alfisols are found in moist areas. These soils result from weathering processes that break the minerals and other constituents out of the surface layer and into the subsoil, where they can be used and recycled by plants. They formed generally under forest or mixed vegetation cover and are productive for most crops.


ALFISOLS MAKE UP ABOUT 18% OF THE WORLD'S RECLAIMED LAND SURFACE.



ANDISOLS

Andisols have their weathering processes that generate minerals with little readily crystalline structure. These minerals can result in an unusually high water- and nutrient-holding capacity. As a group, Andisols tend to be highly productive soils. They include usually well-aerated soils with much soil air; glauas as well as more strongly weathered soils. They are common in cool areas with moderate to high precipitation, especially those areas associated with volcanic materials.

ANDISOLS MAKE UP ABOUT 1% OF THE WORLD'S RECLAIMED LAND SURFACE.




ARIDISOLS

Aridisols are soils that are too dry for the growth of mesophytic plants. The lack of moisture greatly restricts the intensity of weathering processes and limits mass and development processes in the upper part of the soils. Includes other secondary gypsum, salt, calcium carbonate, and other materials that are rarely leached from soils in more humid environments.

ARIDISOLS ARE COMMON IN THE DESERTS OF THE WORLD.


ARIDISOLS MAKE UP ABOUT 12% OF THE WORLD'S RECLAIMED LAND SURFACE.



ENTISOLS

Entisols are soils that show little or no evidence of pedogenic horizon development. Entisols occur in areas of recently deposited parent materials or in areas where erosion or degradation rates are faster than the rate of soil development, such as dunes, steep slopes, and flood plains. They occur in many environments.


ENTISOLS MAKE UP ABOUT 16% OF THE WORLD'S RECLAIMED LAND SURFACE.



GELISOLS

Gelisols are soils that have permafrost near the soil surface and/or have evidence of cryoturbation (frost churning and/or segregation). Gelisols are common in the higher latitudes or at high elevations.


GELISOLS MAKE UP ABOUT 9% OF THE WORLD'S RECLAIMED LAND SURFACE.



HISTOSOLS

Histosols have a high content of organic matter and no permafrost. Most are saturated year-round, but a few are freely drained. Histosols are commonly silt/clay, silt/sand, or sand/silt. Histosols have an decomposed plant remains that accumulate in water-saturated soils, or more later than they decay. If these soils are drained and exposed to an, microbial decomposition is accelerated and the soils may subside dramatically.


HISTOSOLS MAKE UP ABOUT 1% OF THE WORLD'S RECLAIMED LAND SURFACE.



INCEPTISOLS

Inceptisols are soils of somewhat to humid environments that generally exhibit only moderate degrees of soil weathering and development. Inceptisols have a wide range in their textures and occur in a wide variety of climates.


INCEPTISOLS MAKE UP ABOUT 17% OF THE WORLD'S RECLAIMED LAND SURFACE.



MOLLISOLS

Mollisols are soils that have a dark colored surface horizon, relatively high in content of organic matter. The soils are less pH throughout and therefore are quite fertile. Mollisols have historically been under grass in climates that have a moderate to pronounced seasonal moisture deficit. They are common soils on the steppes of Europe, Asia, North America, and South America.


MOLLISOLS MAKE UP ABOUT 7% OF THE WORLD'S RECLAIMED LAND SURFACE.



OXISOLS

Oxisols are highly weathered soils of tropical and subtropical regions. They are distinguished by low activity minerals, such as quartz, kaolinite, and iron oxides. They tend to have indistinct horizons. Oxisols have typically occur on land surfaces that have been stable for a long time. They have low natural fertility as well as a low capacity to retain additions of lime and fertilizer.


OXISOLS MAKE UP ABOUT 8% OF THE WORLD'S RECLAIMED LAND SURFACE.



SPODOSOLS

Spodosols formed from weathering processes that strip organic matter combined with aluminum, such as without iron from the surface layer and deposit them in the subsoil. An archaic soil type, a gray eluvial horizon that has the color of uncolored sand. Spodosols typically occur in forest or forest/tundra regions. Spodosols commonly occur in areas of coarse-textured deposits under conditions favorable of humid regions. They tend to be acid and infertile.


SPODOSOLS MAKE UP ABOUT 8% OF THE WORLD'S RECLAIMED LAND SURFACE.



ULTISOLS

Ultisols are soils in humid areas. They formed from light to moderate weathering and leaching processes that result in a clay-enriched subsoil dominated by minerals, such as quartz, kaolinite, and iron oxides. Ultisols are typically acid soils in which most nutrients are concentrated in the upper few inches. They have a moderately low capacity to retain additions of lime and fertilizer.

ULTISOLS MAKE UP ABOUT 8% OF THE WORLD'S RECLAIMED LAND SURFACE.



VERTISOLS

Vertisols have a high content of expanding clay minerals. They undergo pronounced changes in volume with change in moisture. They have cracks that open and close periodically, and that show evidence of soil movement in the profile. Because they swell when wet, vertisols transmit water very slowly, and have undergone little leaching. They tend to be fairly high in natural fertility.

VERTISOLS MAKE UP ABOUT 2% OF THE WORLD'S RECLAIMED LAND SURFACE.

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These documents require Acrobat Reader.

- [The Twelve Orders of Soil Taxonomy](#) (PDF; 6197 KB) -- high-resolution of poster (print at 200%, 26"x36")
- [Alfisols](#) (PDF; 918 KB)
- [Andisols](#) (PDF; 679 KB)

[Aridisols](#) (PDF; 810 KB)
[Entisols](#) (PDF; 634 KB)
[Gelisols](#) (PDF; 569 KB)
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