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of the United Nations

Status of the World's Soil Resources

Main Report

Glossary of
technical terms

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Glossary of technical terms

Aerobic: a condition in which molecular oxygen is freely available (ISO, 2013).

Anaerobic: descriptive of a condition in which molecular oxygen is not available (ISO, 2013).

Available water capacity: soil water content useable by plants, based on the effective root penetration depth (ISO, 2013).

Bare Soil: a land cover class that includes any geographic area dominated by natural abiotic surfaces (bare soil, sand, rocks, etc.) where the natural vegetation is absent or almost absent (covers less than 2 percent) (Latham *et al.*, 2014).

Biodegradation: physical and chemical breakdown of a substance by living organisms, mainly bacteria and/or fungi (ISO, 2013).

Contaminant: substance or agent present in the soil as a result of human activity (ISO, 2013).

Cropland: a land cover class that includes all cultivated herbaceous crops, woody crops and multiple and layered crops (Latham *et al.*, 2014).

Decomposition: breakdown of complex organic substances into simpler molecules or ions by physical, chemical and/or biological processes (ISO, 2013).

Desertification: land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (UNCCD, 2011).

Drylands: tropical and temperate areas with an aridity index (annual rainfall/annual potential evaporation) of less than 0.65 (UNEP, 2005).

Grassland: a land cover class that includes any geographic area dominated by natural herbaceous plants (grasslands, prairies, steppes and savannahs) with a cover of 10 percent or more, irrespective of different human and/or animal activities e.g. grazing, selective fire management (Latham *et al.*, 2014).

Habitat ecosystem functions: the ability of soil or soil materials to serve as a habitat for micro-organisms, plants, soil-living animals and their interactions (ISO, 2013).

Humification: decomposition of organic material followed by a synthesis of humic substances (ISO, 2013).

Land: terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system (UNCCD, 2011).

Leaching: the dissolution and movement of dissolved substances by water (ISO, 2013).

Mineralization: final stage of the biodegradation of organic matter or organic substances into carbon dioxide, water and hydrides, oxides or other mineral salts (ISO, 2013).

Mitigation (of land degradation): an intervention intended to reduce ongoing degradation at a stage when degradation has already begun. The main aim here is to halt further degradation and to start improving resources and their functions (FAO, 2015).

Parent material: The unconsolidated and more or less chemically weathered mineral or organic matter from which the solum of soils is developed by pedogenic processes (Soil Science Society of America, 2008).

Particle size distribution: distribution of the soil mineral particles according to predefined classes of size (ISO, 2013).

Pedon: the smallest, three-dimensional unit at the surface of the earth that is considered as a soil. It forms a conceptual foundation for the study of soils as geographic entities (Hole and Campbell, 1985).

pH-value: the negative logarithm (base 10) of the concentration of hydrogen ions, expressed in moles/l in aqueous solution and varying between 0 (extremely acid) to 14 (extremely alkaline) (ISO, 2013).

Rehabilitation: action to restore soil already degraded to such an extent that the original use is no longer possible and the land has become practically unproductive. Generally, long term and often costly investments are needed to show any impact (FAO, 2015).

Shrub-covered area: a land cover class that includes any geographical area dominated by natural shrubs having a cover of 10 percent or more (Latham *et al.*, 2014).

Soil: the upper layer of the Earth's crust transformed by weathering and physical/chemical and biological processes. It is composed of mineral particles, organic matter, water, air and living organisms organized in genetic soil horizons (ISO, 2013).

Soil degradation: the diminishing capacity of the soil to provide ecosystem goods and services as desired by its stakeholders (refined from FAO, 2015).

Soil ecosystem functions: description of the significance of soils to humans and the environment. Examples are: (1) control of substance and energy cycles within ecosystems; (2) basis for the life of plants, animals and man; (3) basis for the stability of buildings and roads; (4) basis for agriculture and forestry; (5) carrier of genetic reservoir; (6) document of natural history; and (7) archaeological and paleo-ecological document (ISO, 2013).

Soil health: the continued capacity of the soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain biological productivity, promote the quality of air and water environments, and maintain plant, animal, and human health (Doran, Stamatiadis and Haberern, 2002).

Soil organic carbon (SOC): a summarizing parameter including all of the carbon forms for dissolved (DOC: Dissolved Organic Carbon) and total organic compounds (TOC: Total Organic Carbon) in soils (ISO, 2013).

Soil organic matter (SOM): matter consisting of plant and/or animal organic materials, and the conversion products of those materials in soils (ISO, 2013).

Soil Processes: physical or reactive geochemical and biological processes which may attenuate, concentrate, immobilize, liberate, degrade or otherwise transform substances in soil (ISO, 2013).

Soil quality: all current positive or negative properties with regard to soil utilization and soil functions (ISO, 2013).

Soil structure: the arrangement of soil particles in a variety of recognized shapes and sizes (ISO, 2013).

Soil threats: see Box 'Soil Threat Definitions'

Box 'Definitions of Soil Threats'

Nutrient imbalance refers to an excess or a lack of nutrients (mainly nitrogen, phosphorus and potassium) in the soil as a consequence of bad land use and management. It may result in soil contamination when nutrients are in excess and in loss of inherent fertility when nutrients are mined.

Soil acidification is defined as the lowering of the soil pH because of the buildup of hydrogen and aluminum ions in the soil and the leaching of base cations such as calcium, magnesium, potassium and sodium. Soil acidification negatively affects soil fertility and compromises the production capacity of most agricultural soils.

Soil biodiversity loss is a decline in the diversity of (micro- and macro-) organisms present in a soil. In turn, this prejudices the ability of soil to provide critical ecosystem services.

Soil compaction is defined as the increase in density and a decline of macro-porosity in a soil that impairs the functions of both the top- and subsoil, and impedes roots penetration and water and gaseous exchanges.

Soil contamination refers to the increase of toxic compounds (heavy metals, pesticides, etc.) in a soil that constitute, directly or indirectly (via the food chain), a hazard for human health and/or for the provision of ecosystem services assured by the soil.

Soil erosion is broadly defined as the removal of (top-) soil from the land surface by running water, wind, ice or gravity. It can be accelerated by human activities (tillage) and animals.

Soil organic carbon loss refers to the decline of organic carbon stock in the soil affecting its fertility status and climate change regulation capacity.

Soil salinization is defined as the increase in water-soluble salts in soil which is responsible for increasing the osmotic pressure of the soil. In turn, this negatively affects plant growth because less water is made available to plants.

Soil sealing refers to the permanent covering of the soil surface with impermeable artificial materials such as asphalt and concrete. This is generally related to urban development and infrastructure construction, which in most cases lead to the absolute loss of the soil resource and of most of its ecosystem services.

Soil sodification is defined as an increase of the exchangeable sodium content of the soil, often accompanied by a loss of soil structure. In turn, it negatively affects soil suitability for crop growth.

Water logging refers to an excess of water on top and/or within the soil, leading to reduced air availability in the soil for long periods.

Solum: comprises the surface layer and subsoil layers that have been altered by soil formation (Soil Survey Staff, 1993).

Sparse vegetation: a land cover class that includes any geographic areas where the cover of natural vegetation is between 2 percent and 10 percent (Latham *et al.*, 2014).

Sustainable land management (SLM): the use of land resources, including soils, water, animals and plants for the production of goods to meet changing human needs while ensuring the long term productive potential of these resources and the maintenance of their environmental functions (UNCED, 1992).

Sustainable soil management (SSM): sets of activities that maintain or enhance the supporting, provisioning, regulating and cultural services provided by soils without significantly impairing either the soil functions that enable those services or biodiversity (adapted from GSP, 2015).

Topsoil: the upper part of a natural soil that is generally dark coloured and has a higher content of organic matter and nutrients when compared to the (mineral) horizons below. It excludes the litter layer (ISO, 2013).

Tree-covered area: a land cover class that includes any geographic area dominated by natural tree plants with a cover of 10 percent or more. Areas planted with trees for afforestation purposes and forest plantations are included in this class (Latham *et al.*, 2014).

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