



Soil of the year 2015 is the Planosol or Stagnosol ("Pseudogley / Stagnogley")



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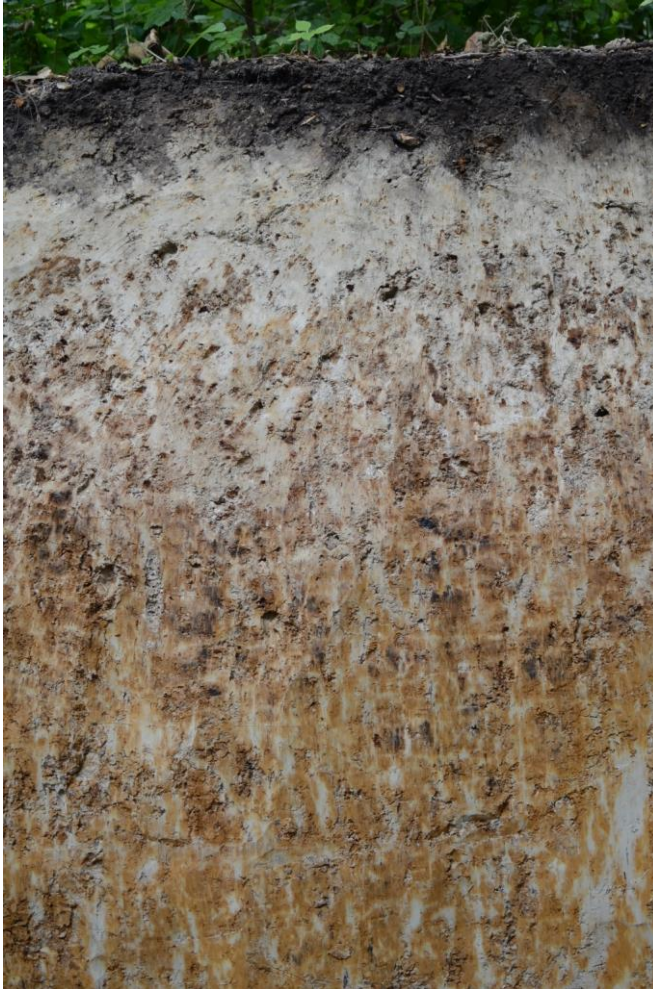
Imprint

Common action of the Deutsche Bodenkundliche Gesellschaft (DBG), Bundesverband Boden (BVB), Ingenieurtechnischer Verband für Altlastenmanagement und Flächenrecycling (ITVA) and Umweltbundesamt (UBA)

Soil Profile Kottenforst Forest near Bonn

Characteristics

Surface water gley soils form where precipitation water drains away into the underground strongly delayed only. Beneath a well permeable layer that is waterlogged after rainfall, there is a dense layer with low permeability. In the German soil classification, most soils affected by stagnating water belong to the Pseudogleys, those with an extended wet phase to the Stagnogleys. The international classification allocates these soils primarily to the Planosols and Stagnosols.



topsoil
contains humus

light grey, bleached under wet conditions

temporarily waterlogged layer

iron mottles, hard iron-manganese segregations

layer with low permeability
higher clay content,
denser, veined

Wet-dry soils

As a function of the water permeability of the soil, the weather conditions and the water use of the plants, surface water gley soils change between wet, moist and dry phases. These phases may vary in length and may occur several times during the course of a year. This results in temporary excess and temporary lack of soil water. During the wet phases, lack of oxygen adversely affects plant roots and soil organisms. On surface water gley soils only those plant species thrive that tolerate wet soil conditions. Little by little develops a mottled to veined soil with spots bleached by water side by side with rust-coloured zones. Often form hard iron and manganese segregations, so-called concretions.

Important for natural balance

Surface water gley soils are unique natural bodies that often provide sites of forest plant communities that prefer changing moisture conditions, e.g. Common Oak-European Hornbeam forests.

Pronouncedly wet surface water gley soils are - due to their extreme site conditions - well suited for rare animal and plant communities.

Surface water gley soils store precipitation water that evaporates time-delayed or is consumed by plants. In this way they buffer precipitation peaks. The perched water drains slowly into the groundwater, possibly of close-by groundwater soils, and into water courses or bodies.



Forest and adapted silviculture

Forests adapted to changing moisture conditions can be stable and productive ecosystems that at the same time are ecologically valuable. Tree species tolerating perched soil water are common oak, European hornbeam, ash, black alder and downy birch. Adversely affected are e.g. Norway spruce, larch and beech; they develop only shallow roots in perched water. In dry years drought damage occurs.

After several wet years in a row, roots suffer from lack of oxygen. During storm events, shallow root trees tend to be thrown.

Timber harvesting does not harm the soil only during dry phases

Sites sensitive to climate

Surface water gleys are sensitive to weather conditions and climate. Increasing numbers of heavy rains result in more frequent wet phases. If climate warming extends the vegetation period, plant water consumption increases, and longer dry periods could occur.

Wet-dry Common Oak-European Hornbeam forests could develop into Beech forests in the long run. During the last 50 years, the vegetation period has already lengthened more than two weeks, and the number of heavy rains has risen.



Further information

Web page Soil of the Year: www.boden-des-jahres.de

German Soil Science Society: www.dbges.de;

Bundesverband Boden: www.bvboden.de

State Geological Surveys of Germany/ad-hoc-AG Boden:

www.infogeo.de/ueberuns/boden/mitglieder

Geological Survey North Rhine-Westphalia:

phone.: +49 2151 897 586 or 897 437, E-mail: boden@gd.nrw.de

Soil science institutes at universities and universities of applied sciences

Information material (Flyer 2015, Poster 2015, CD's of all Soils of the Years)

Flyer and Poster: Federal Environment Agency (Umweltbundesamt)

www.umweltbundesamt.de/publikationen/poster-boden-des-jahres-2015-stauwasserboden

CDs about all Soils of the year 2005 – 2015: E-mail: frielinghaus@zalf.de