



**Soil of the Year 2005:
Chernozem („Schwarzerde“)**



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Curatorship Soil of the Year



Characteristics

International classification : Chernozem (WRB)

German classification: Schwarzerde

Where does the name come from?

The enrichment of high-quality humus down to 80 cm leads to a large horizon with dark brown to black color.

How are these thick black humus horizons formed?

Black soils ("Schwarzerden", Chernozem) were developed under continental climatic conditions, with hot summers and cold winters, and upon aeolian sediments rich in calcium carbonate. Dry conditions at the lee side of highlands impeded the development of natural forests. Instead, ample steppe vegetation was established by grass and herbs with isolated groves. This vegetation cover produced large amounts of organic material, but in the summer the plant cover shrivelled during the drought period. The dry summer conditions and the cold winter temperatures reduced the decomposition of the dead organic material due to a rapid increase of organic matter and accumulation of humus in soils. The soil fauna, mainly earthworms, voles, and the European ground squirrel brought the organic material deep into the ground and jumbled the deep horizon. In the present time, we can recognize the filled ancient pathways and burrows of the small animals, the so-called "bioturbation" (see profile picture).

What is the functional relevance of these soils for humans and the environment?

Black soils are very valuable arable soils. For example, such soil has the highest benchmark of 100 based on the German Soil Quality Ranking "Bodenschätzung" (Eickendorf, Magdeburger Boerde). This means that more than 10 tons per hectare of winter wheat can be produced. Additionally, these soils have extraordinary attributes for filtering, buffering and storing nutrients. Therefore, they have a very high biological activity and biodiversity. Many archaeological places of discovery within these soils attest to the early settlement since the New Stone Age.

What are the risks for these soils?

Due to how valuable these soils are, the main risk is soil sealing. Additionally, their high silt content makes these soils susceptible to an increased risk for wind and water erosion.

Where these soils can be found?

In Germany, the loess landscapes such as Magdeburg and Hildesheim Boerde are well known to have black soils. Additionally, they appear in the arable areas around Halle and Köthen/ Saxony-Anhalt and in the region of the Querfurt plate/Thuringia and the Thuringian basin. In other parts of Germany, black soils occur only sporadically, mostly in a modified relict form.

The best described profile is the Chernozem in Bad Lauchstädt nearby Halle/Saxony-Anhalt. More information is available at the special Soil Museum in Eickendorf/ Saxony-Anhalt.

Where you get more information?

Museum für Bodenschätzung Eickendorf : [Tel:039297-20310](tel:039297-20310)

Versuchsstation Bad Lauchstädt, UFZ Halle-Leipzig, Dr. Ines Merbach: [Tel:034635-90417](tel:034635-90417)

Landesamt für Geologie und Bergwesen Sachsen-Anhalt: [Tel:0345-52120](tel:0345-52120)

More material (Flyer, Poster, CD's) are available: frielinghaus@zalf.de