Soils of the EU presidency

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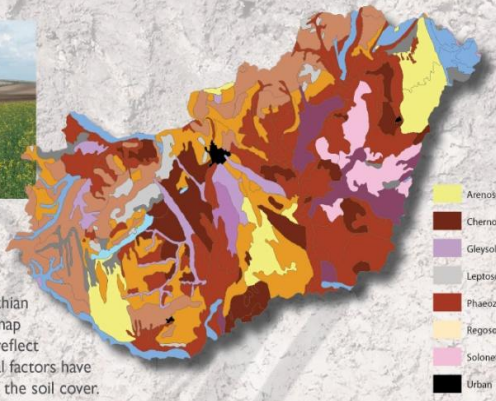
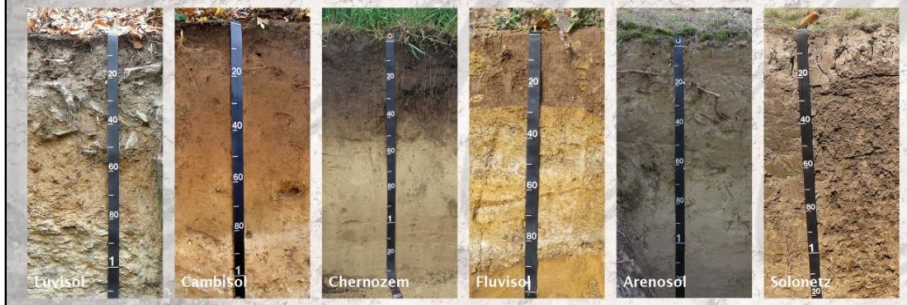
The European Soil Bureau Network and the Hungarian Soil Science Society, under the auspices of the 2011 Hungarian Presidency of the European Union, is proud to present

THE SOILS OF HUNGARY



Soils are amongst the most precious natural resources of Hungary. The favourable landscape, climate and soil conditions allowed the original Hungarians to settle in the Carpathian Basin. When looking at the soil map of Hungary, the various colours reflect how differences in environmental factors have determined the development of the soil cover.



The main soils of Hungary (see map above)

In hillier or mountainous areas, higher precipitation and lower temperatures lead to the development of soils under forest vegetation. These fertile soils, known as Luvisols, were heavily influenced by percolating water which led to the accumulation of clay in the subsoil. In the area between the mountains and the Hungarian Great Plain, young soils without distinct profile development are found (Cambisols). In lowland areas, one can find dark Chernozems, the most fertile soil of Hungary that supports the country's agricultural production (see adjacent poster for more details). Soils in river valleys that have developed on stratified sediments are called Fluvisols. Arenosols, soils that have developed on windblown sands deposited after the end of the last ice age, are extensive in certain parts of the country. In certain situations, ground water containing soluble salts can be found close to the surface. If evaporation is higher than precipitation, then salt-affected soils such as Solonchaks and Solonetzs can be found.

Use

The soils of Hungary have been used very intensively throughout history for the cultivation of crops, for animal grazing and supporting woodlands for construction material. Currently, 48% of land is used for crops (mostly wheat and corn), 21% are forests, 8% are grasslands and 20% is uncultivated.

Issues

The major limitation to agriculture in Hungary is precipitation. Climate change models predict that Hungary will experience extreme precipitation events in the future. The greatest challenge is to store the rainfall within the soil through effective soil management practices. Such techniques will control erosion, minimise the loss of topsoil and maintain or even enhance organic carbon and the bio-diversity levels of the soils.

The Hungarian Soil Science Society (Magyar Talajtani Társaság) serves as common forum for Hungarian soil scientists in academia, research and practice.
http://www.soil.hu/

European Soil Bureau Network

Soil performs many vital functions that are worthy of protection because of their socio-economic as well as environmental importance. For this reason, the European Commission has adopted a Soil Thematic Strategy with the objective to protect soils across the EU. For more information, please visit
http://ec.europa.eu/environment/soil/index_en.htm

Located in Ispra (Italy), the SOIL Action of the JRC's Institute for Environment and Sustainability undertakes research to support European Union strategies and policies that are relevant to soil resources in the EU and beyond. For more information on the IES or specifically soil related activities please visit either:
http://eusoils.jrc.ec.europa.eu/ or http://ies.jrc.ec.europa.eu

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THE SOILS OF HUNGARY

Soils are among the most precious natural resources of Hungary. The favourable landscape, climate and soil conditions allowed the original Hungarians to settle in the Carpathian Basin.

The most fertile soils are the dark Chernozems, that have developed predominantly in lowland areas in loess and loess-like sediments under ancient grasslands. They cover 21% of Hungary.

Chernozem

A highly productive soils that is used for agriculture, Chernozems have a deep, dark, surface horizon (0 – 50 cm in the photograph) that is rich in organic matter. They carry favourable physical chemical properties, such as a good granular structure, high porosity, good infiltration and water storage and nutrient holding capacity. These characteristics ensure good yields for almost any crop type that is grown in them. The only limitation to agricultural production is the availability of water. The major crops grown on Chernozems are winter wheat and corn. A typical Chernozem soil profile will exhibit a 40-60 cm deep topsoil that is soft and rich organic matter, overlaying a subsoil containing calcium carbonate rich parent material. There is usually a transitional horizon in between the two.

Chernozems are sensitive to mismanagement and can lose several of the highly sought after properties mentioned above if care is not taken. Compaction, structural degradation and erosion are the most common issues. Compacted soils have reduced porosity and infiltration causing increased runoff, erosion and less storage of soil moisture. With appropriate soil management practices, the organic carbon content and the bio-diversity of the soils can be maintained or even enhanced.

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SOILS OF THE EU PRESIDENCY

In conjunction with the rotating presidency of the European Union, the SOIL Action of the JRC has a long-term programme to collect a representative soil monolith from each country.

From left to right:

Podzol (Denmark): an acid soil that has developed in sandy, quartz-rich parent material under conifer forests. Organic material and soluble minerals (mostly iron and aluminium) have been leached by organic acids and water from upper horizons to deeper layers. This gives rise to a paler upper horizon while underlying horizons are darker. The leached minerals have been 'redeposited' within the soil to create a distinctive cemented hardpan on which organic matter can accumulate.

Umbrisol (Ispra): an acid soil with a dark, organic-rich topsoil from the grounds of the JRC site in Ispra. Umbrisols develop in the weathering material of silica-rich rocks in mostly cool humid climates. This particular example shows signs of human disturbance and evidence of freezing and thawing under permafrost conditions associated with the last Ice Age.

Albeluvisol (Lithuania): a soil with a thin, dark surface horizon on a bleached subsurface horizon (not visible in this examples due to ploughing) that tongues into a deeper horizon where clay has accumulated. Such soils are generally formed in glacial till, lacustrine or fluvial sediments or wind-blown deposits (loess) on flat to undulating plains under coniferous or mixed forest in boreal and temperate climates.

Chernozem (Hungary): a well draining soil with a deep, very dark topsoil that is rich in humus and a well developed granular structure, overlaying a lime-rich subsoil (i.e. high pH). Such soils are typical of cool to temperate regions under permanent natural grasslands. Often referred to as steppe or prairie soils, Chernozems are amongst the most fertile soils on Earth.

Arenosol (Poland): a coarse-textured (sandy) soil that lacks significant soil profile development. They exhibit a shallow surface horizon (uppermost layer) and are bereft of subsurface clay and organic matter accumulation. Given their excessive permeability and low nutrient content, agricultural use of these soils requires careful management.

Histosol (Ireland): a soil formed under waterlogged conditions typically found in peat bogs, moors, and swamps. Under such conditions, the decomposition of dead plant material is reduced resulting in soils with high organic matter content and very low mineral particles. Peat soils are rapidly oxidised and shrink if drained – as seen in this example which has almost halved in volume since collection. Histosols are a major sink of organic carbon and often underpin ecologically sensitive areas.

Calcisol: is a soil rich in lime (calcium carbonate). Calcisols are characterized by soft and powdery or hard and cemented layers where calcium carbonate has migrated through the soil. They are usually well-drained with fine to medium texture and are relatively fertile because of their high calcium content. Their chief use is for animal grazing and are typically found in arid or Mediterranean climatic zones.

and more--
Italy, Austria, Slovenia

International Union of Soil Sciences

IUSS World Soil of the Year 2024

Calcic Chernozem of the Bălți Steppe, Moldova

Nominated by the

Society of Soil Science of Poland & Canadian Society of Soil Science

On behalf of the

Moldovan Soil Science Society

Proclaimed at the IUSS Centennial Celebration and Congress,

Florence, Italy, on May 21st of 2024

100 years of SOIL SCIENCE past achievements and future challenges

Edoardo A.C. Costantini,
President of IUSS

Richard J. Heck,
Chair of IUSS WSY Task Force & Division 1 – Soils in Space & Time

IUSS World Soil of the Year 2025 we have a candidate soil

at the same time we would like to relaunch the presidency soil initiative → we nominate the same soil as

Hungarian National Soil of the 2024 EU presidency

International Union of Soil Sciences

HU24EU

Hungarian Presidency of the Council of the EU

A beautiful soil under forest in the steppe zone that experienced several stages of genesis with many azonal influences of fluvial an eolian sediments and saline groundwater

Oxygleyic **Chernic GLEYSOL**
(Loamic, Uterquic, Protocalcic, Bathyraptic, Bathyreductic, Bathyprotosalic, Thaptovertic)

(WRB, 2022)

Location:
Püspökladány
Hortobágy National Park
Part of Biosphere Reserve
It is a also 100 years old experimental site of aforrestation of saline and sodic less fertile soils. The ecological services of the land has been improved significantly.

International Decade of Soils 2015-2024

HU24EU Hungarian Presidency of the Council of the EU

I ♥ SOIL