



Soil of the Year 2013: Plaggic Anthrosols



Proposal and material preparation:

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Fotos: K. Mueller, L. Giani



Figure 1: Brown Plaggic Anthrosol (Foto Mueller)



Figure 2: Grey Plaggic Anthrosol (Foto Giani)

International classification: Brown or Grey Anthrosols
German classification: Plaggenesch

Characteristics

What do Plaggic Anthrosols look like?

Plaggic Anthrosols are characterized by a humic layer of more than 40 cm, sometimes exceeding 150 cm. This plaggic layer has developed over the course of periodic application of organic - mineral manure by man during centuries. These applications cause raised structures in the landscape with typical field ridges, partly visible today.

The color of the plaggic layer is caused by the kind of organic mineral manure used. Sods from heathlands have generated grey Plaggic Anthrosols and sods from meadows have generated brown Plaggic Anthrosols. As a matter of fact, the plaggic layers often contain residual charcoal, bricks or other remains of domestic use.

How do Plaggic Anthrosols develop?

The formation of Plaggic Anthrosols is closely connected with the Plaggen agricultural management style which is assumed to have started nearly 1,000 years ago. The introduction of the Plaggen management style was simultaneous with the beginning of continuous rye cultivation, called eternal rye cultivation in Germany. Like the beginning of rye cultivation, the introduction of mineral fertilizer was also an important agricultural improvement.

During Plaggen management, sods were cut with special tools in common lands. Sods are composed of grass herb shrub material with its roots and soil components attached to them. They were taken to the stables, enriched with dung, sometimes composted afterwards, and finally spread on the fields as valuable organic mineral manure. This led to sustainable soil fertility still recognizable by increased estimates for agricultural evaluation. However, the common lands exhausted in humus and nutrients had become susceptible to erosion which formed shifting dunes.

How are Plaggic Anthrosols distributed?

The main areas of grey Plaggic Anthrosols are the nutrient-poor Saalian areas of Northwest Germany. The brown Plaggic Anthrosols occur predominantly further to the south, in the area of Osnabrück and the south-eastern Münsterland. Isolated occurrences are documented in the North-frisian region on the islands of Amrum, Föhr und Sylt.

How are Plaggic Anthrosols used?

Formerly, rye cultivation was the focus of agricultural production. At present, all kinds of cereals, root crops, and potatoes are produced which are being displaced by corn to an increasing extent. Additionally, Plaggic Anthrosols are preferentially used for specialized cultivation, e.g. tree nurseries.

What functions do Plaggic Anthrosols achieve for humans and the environment?

Plaggic Anthrosols are important archives of landscape and cultural history. They are documents of former land use practices, visible in the plaggic soil layer and thereby evident in the landscape today. In addition, they are archives of archaeological findings to be discovered within and below the plaggic layer. In some places, the plaggen layers protect very old archaeological witnesses.

Which are the threats to Plaggic Anthrosols?

Because of their distribution close to settlements, many Plaggic Anthrosols are threatened by built-up areas. Large areas are already covered with buildings and have been sealed. Tree nurseries are also a matter of concern, because the trees are excavated with the surrounding soil material, which causes considerable mass losses accompanied by losses of ecosystem functions.

Where You get more information:

Carl-von-Ossietzky-Universität Oldenburg, Institut für Biologie und Umweltwissenschaften, Tel.: 0441-798-3335, luise.giani@uni-oldenburg.de

Hochschule Osnabrück, Fakultät Agrarwissenschaften und Landschaftsarchitektur, Tel.: 0541-969-5151 oder -5144, l.makowsky@hs-osnabrueck.de; k.mueller@hs-osnabrueck.de

Niedersächsisches Landesamt für Bergbau, Energie und Geologie (LBEG), Hannover, Tel.: 0511-6433601, ernst.gehr@lbeg.niedersachsen.de

Ad-hoc AG Boden der Bundesanstalt für Geowissenschaften und Rohstoffe sowie der Staatlichen Geologischen Dienste der Länder: www.bgr.bund.de

Deutsche Bodenkundliche Gesellschaft, AG Bodensystematik: www.dbges.de;

Bundesverband Boden: www.bvboden.de, www.bodenwelten.de

Bodenkundlich orientierte Institute an Hoch- und Fachschulen sowie Geologische Landesämter der Länder

Further information and material:

(posters, flyers, CD's)

Curatorship Soil of the Year, Prof. Monika Frielinghaus, ZALF Müncheberg, frielinghaus@zalf.de



Field ridges in the landscape
 plaggen cutting area (l.) and application area (r.) plaggen cutting area (r.) and application area (l.)



Typical arable land with winter rye on a Plaggic Anthrosol

Conversion of a Plaggen field for building land on the outskirts of the town of Rulle



Secondary vegetation after plaggen cutting

Varnish profile of a historical fireplace