

## Excursion site no 4 (in forest): Anthrosol

### Description

ISRIC reference soil Netherlands 12

VEGETATION: Red oak (*Quercus borealis*)

### Classification

**WRB 2015:** Plaggic Anthrosol (Dystric, Pantoarenic)

**WRB 2006:** Plaggic Anthrosol (Dystric, Arenic)

**WRB 1998:**

Areni- Plaggic Anthrosol

### FAO-UNESCO-ISRIC 1988:

Fimic Anthrosol

### FAO-UNESCO 1974:

Humic Cambisol

### Site description

#### General information:

Location of profile :

Names of person(s) who described the profile

Kraanen CJM, JH Kauffman & AB Bos

#### Physiography:

The altitude of the soil profile relative to mean sea level, specified in meters : 25 m asl

Regional landform

: sand plain

Topography of the surrounding country

: undulating

Physiographic Unit in the immediate surrounding of the site

: low ridge

General description of location of profile (e.g., town, province) : Prov. of Gelderland, 15m N of provincial road N224 Ede-Arnhem at km 43.9, 100m W of Bosbedrijf Ede

The slope refers to the inclination of the land immediately surrounding the site. The measured or estimated slope angle is specified to the nearest per cent : 0 %

Climate classification according to Köppen

: Cfb

The physiographic position of the site where the profile is located :

Date

: June 1984

Form of the slope surrounding the site

:

Latitude / Longitude

: N 52.0386111° / E 5.74194°

Slope Aspect of the site

:

#### Parent material:

The main parent rock/ material over which the soil has been formed (1st entry) :

mixed lithology and composition

#### Hydrology and drainage:

Depth of groundwater : cm  
table

Groundwater Top : cm

Groundwater Bottom : cm

		Kind of groundwater table	: no groundwater table observed
Mode of Accumulation or deposition of parent material (1st entry)	: eolian sand	Top Stagnating Layer	: cm
Texture of parent material (1st entry)	:	Bottom Stagnating Layer	: cm
Weathering status of solid rock (1st entry)	: partially or moderately	Runoff	: rapid
Resistance against weathering (solid rock) (1st entry)	: high	Flooding frequency	: never
	:	Estimated permeability: (class) of least permeable part of the profile	high
Depth1 of lithological boundary	cm		
The main parent rock/ material over which the soil has been formed (2nd entry)	:	Drainage Class	: well
Texture of parent material (2nd entry)	: sandy	To Drainage Class	: somewhat excessive
	:	Moisture conditions of the profile: dry from - to	cm
Resistance against weathering (solid rock) (2nd entry)	:		
Soil Depth; depth to which roots can easily penetrate throughout the year	: 100 cm	Moisture conditions of the profile: moist from -to	0-150 cm
Remarks on Parent Materials	: cover sand of Weichselian age	Wet From - To	: cm

Land use / vegetation:		Erosion and aggradation:	
Current land use at the site	: forestry	Soil erosion type (1st entry)	:
Major crops	:	Occurrence of soil aggradation	:
Main type of irrigation	: no irrigation	Slope Stability	:
Rotation scheme	:		
Vegetation Type; The natural vegetation at the site	: deciduous forest		
Status of vegetation	:		
Remarks on Land Use / Vegetation	: Originally arable land		

#### Surface characteristics:

Microrelief type: small-scale : differences in relief in the direct vicinity of the site

Microrelief Height :

Rockiness : none

Stoniness : none

Average size of stones :  
 Shape of stones (on average) :  
 Cracks : no cracks observed  
 Slaking of aggregates by tillage, rainfall or frost : no surface slaking/crusting observed  
 Evidence of salt : non-saline  
 Evidence of alkali : non-alkaline  
 Nearest climate station:  
 Station : No representative climate station available for this site

## Profile description:

Ap1 0-6 cm : (7.5YR 2/1.5, moist), loamy fine sand slightly gravelly organic slightly, structureless porous massive, loose, highly porous (>60 vol%), many fine and medium in cracks roots, frequent, non-calcareous, abrupt smooth boundary to,  
 Ap2 6-35 cm : (7.5YR 3.5/4, moist), fine sand slightly gravelly organic highly, strongly coherent porous massive to single grain, loose, broken thin humus cutans, common fine and medium roots, non-calcareous, gradual smooth boundary to,  
 Ap3 35-65 cm : (7.5YR 3.5/4, moist), fine sand slightly gravelly organic highly, moderately coherent single grain to very weak medium platy, loose, broken thin humus cutans, common fine and medium roots, non-calcareous, gradual smooth boundary to,  
 AC 65-115 cm : (7.5YR 3.5/4, moist), fine sand slightly gravelly organic highly, structureless single grain, loose, patchy thin humus cutans, common fine and medium roots, non-calcareous, clear wavy boundary to,  
 C 115-150 cm : red (2.5YR 4/8, moist), fine sand slightly gravelly, structureless single grain, loose, non-calcareous,

## Physical

### Particle size distribution:

Depth (cm)	Gravel (%)	Very Coarse Sand (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Very Fine Sand (%)	Total Sand (%)	Coarse Silt (%)	Fine Silt (%)	Total Silt (%)	Clay (%)
0-6	-	0.2	2.5	15.2	49.8	16.8	84.5	7.7	3.3	11	4.6
6-35	-	0.2	2.5	15.4	50.7	16.2	85	7.8	2.4	10.2	4.8
35-65	-	0.1	1.3	13.3	49.6	17.8	82.1	9.3	3.4	12.7	5.2
65-115	-	0.2	1.4	13.3	50.8	18.5	84.2	9	3.3	12.3	3.7
115-150	-	0.3	2	15.2	60.6	17.1	95.2	2.8	0.6	3.4	1.5

## Other physical data

Depth (cm)		Bulk Density (kg/dm <sup>3</sup> )	Spec. Surf. Area (m <sup>2</sup> /g)	COLE (cm/cm)	Water Disp. Clay (%)	Clay (%)
0-6	:	-	-	-	-	4.6
6-35	:	-	-	-	-	4.8
35-65	:	-	-	-	-	5.2
65-115	:	-	-	-	-	3.7
115-150	:	-	-	-	-	1.5

## Chemical characteristics:

Depth (cm)	pH H2O	pH KCl	EC 1 : 2.5 (mS/cm)	CaCO <sub>3</sub> (%)	Org. C (%)	Org. N (%)	C / N	Exch. Acid (cmol/k g)	Exch. Al (cmol/k g)	Ca (cmol/k g)	Mg (cmol/k g)	K (cmol/k g)	Na (cmol/k g)	Sum Cations (cmol/k g)
0-6	: 3.6	2.9	0.14	-	4.07	-	-	-	-	1.6	0.3	0.1	0.0	2
6-35	: 3.8	3.4	0.09	-	2.41	-	-	-	-	0.8	0.1	0	0.0	0.9
35-65	: 4.0	3.8	0.15	-	2.17	-	-	-	-	0.8	0.1	0	0.0	0.9
65-115	: 4.3	4.2	0.06	-	0.51	-	-	-	-	0.8	0.1	0	0.0	0.9
115-150	: 4.4	4.4	0.05	-	0.12	-	-	-	-	0.8	0.1	0	0.0	0.9

Depth (cm)	CEC Soil (cmol/kg)	CEC Clay (cmol/kg)	CEC Org (cmol/kg)	ECEC (cmol/kg)	Base sat. (%)	Al sat. (%)	ESP (%)
0-6	: 12.8	-	14.2	-	16	-	-
6-35	: 7.1	-	8.4	-	13	-	-
35-65	: 5.9	-	7.6	-	15	-	-
65-115	: 1.6	-	1.8	-	56	-	-
115-150	: 0.5	-	0.4	-	180	-	-

## Source of analyzing procedures:

Laboratory	Attribute	Description	Proc. ref
ISRIC	Base sat.	Calculation; Sum of Exchangeable Cations (Na, K, Ca, Mg) / CEC soil	<a href="#">labmanual</a>
ISRIC	Ca	Exchangeable bases with 1 M ammonium acetate at pH 7; Ca by atomic absorption spectrometry	<a href="#">9-4 and 9-5.3</a>
ISRIC	CEC Org	CEC organic matter; expert estimate for charge per unit C	<a href="#">9-6.3</a>
ISRIC	CEC Soil	CEC; with index cation in buffered solution pH7	<a href="#">9-4 and 9-5.3.3</a>
ISRIC	Clay; < 0.002 mm	Fraction by Pipette analysis; after removal CaCO <sub>3</sub> and organic matter, dispersion and sedimentation	<a href="#">3-4.7</a>
ISRIC	EC 1 : 2.5	Electro Conductivity of a soil / water (1:2.5) suspension	<a href="#">4-1.4 and 13-4</a>
ISRIC	K	Exchangeable bases with 1 M ammonium acetate at pH 7; K by flame atomic emission spectrometry	<a href="#">9-6.1</a>

ISRIC	Mg	Exchangeable bases with 1 M ammonium acetate at pH 7; Mg by atomic absorption spectrometry	<a href="#">9-4 and 9-5.3</a>
ISRIC	Na	Exchangeable bases with 1 M ammonium acetate at pH 7; Na by flame atomic emission spectrometry	<a href="#">9-4 and 9-5.3</a>
ISRIC	Organic Carbon	Wet combustion of organic matter by potassium dichromate and sulphuric acid at about 125 degrees Celcius. Residual dichromate is back titrated against ferrous sulphate. To compensate for incomplete destruction an empirical correction factor of 1.3 is applied	<a href="#">5</a>
ISRIC	pH H2O	pH electrode; in supernatant suspension	<a href="#">4-1</a>
ISRIC	pH KCl	In supernatant suspension; potentiometrically	<a href="#">4-1</a>
ISRIC	Sand; 0.10 - 0.05 mm	Fraction by sieving; after removal CaCO3 and organic matter	<a href="#">3-4.6</a>
ISRIC	Sand; 0.25 - 0.10 mm	Fraction by sieving; after removal CaCO3 and organic matter	<a href="#">3-4.6</a>
ISRIC	Sand; 0.5 - 0.25 mm	Fraction by sieving; after removal CaCO3 and organic matter	<a href="#">3-4.6</a>
ISRIC	Sand; 1.0 - 0.5 mm	Fraction by sieving; after removal CaCO3 and organic matter	<a href="#">3-4.6</a>
ISRIC	Sand; 2.0 - 0.05 mm	Total sand fractions by sieving; after removal CaCO3 and organic matter	<a href="#">3-5</a>
ISRIC	Sand; 2.0 - 1.0 mm	Fraction by sieving; after removal CaCO3 and organic matter	<a href="#">3-4.6</a>
ISRIC	Silt; 0.02 - 0.002 mm	Fraction by Pipette analysis ; after removal CaCO3 and organic matter, dispersion and sedimentation	<a href="#">3-4.7</a>
ISRIC	Silt; 0.05 - 0.002 mm	Calculation; Sum fractions Silt 0.05 - 0.02 mm	<a href="#">3-4.7</a>
ISRIC	Silt; 0.05 - 0.02 mm	Fraction by Pipette analysis ; after removal CaCO3 and organic matter, dispersion and sedimentation	<a href="#">3-4.7</a>
ISRIC	Sum cations	Sum of Exchangeable Cations (Ca, Mg, Na, K) with 1 M ammonium acetate at pH 7	<a href="#">9-</a>

\*ref: no labmanual available, link to presumable used analytical methode

## Other classification

USDA-NRCS (1999) : Plagganthrept

USDA-SCS (1975) : Plaggept      sandy      siliceous      mesic

## Classification (other) :

Enkeerdgrond (black) (Dutch Classification)