

Polygenetic sandy soil road Ede-Arnhem at km 45

Description

TOPOGRAPHY: stabilized dune field with hummocky relief. Dunes were stabilized around 1940.

ISRIC reference soil, Netherlands 23

WRB 2015: Dystric Arenosol (Aeolic, arenic, protospodic) over Plaggic Anthrosol (Arenic, Dystric)

This classification assumes that the black subsoil horizon, the Bhb, is a buried plaggic horizon rather than a former spodic B horizon.

If we assume a spodic B then the classification will be:

Dystric Arenosol (Aeolic, arenic, protospodic) over Entic Podzol (Arenic)

Classification

WRB 1998: Spodi- Dystric Arenosol

FAO-UNESCO-ISRIC 1988: FAO-UNESCO 1974:

Dystri- Haplic Arenosol

Cambic Arenosol

Site description

General information:

Names of person(s) who described the profile : Kraanen CJM, JH
Kauffman & AB Bos

General description of location of profile (e.g., town, province) : Prov. of Gelderland, 30m S
of provincial road N 224
Ede-Arnhem at km45

Climate classification according to Köppen : Cfb

Date : June 1984

Latitude / Longitude : N 52.0322222° / E
5.76306°

Physiography:

The altitude of the soil profile relative to mean sea level, specified in meters : 28 m asl

Regional landform : dune field

Topography of the surrounding country : undulating

Physiographic Unit in the immediate surrounding of the site : dune

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 %

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

Form of the slope surrounding the site :

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
Mode of Accumulation or deposition of parent material (1st entry)	:	eolian sand
Texture of parent material (1st entry)	:	sandy
Weathering status of solid rock (1st entry)	:	slightly
Depth1 of lithological boundary	:	160 cm
The main parent rock/ material over which the soil has been formed (2nd entry)	:	
Texture of parent material (2nd entry)	:	sandy
Weathering status of solid rock (2nd entry)	:	partially or moderately
Resistance against weathering (solid rock) (2nd entry)	:	
Soil Depth; depth to which roots can easily penetrate throughout the year	:	160 cm
Remarks on Parent Materials	:	recent eolian sand over Pleistocene eolian deposit (Weichselian cover sand)

Land use / vegetation:

Current land use at the site	:	forestry
Major crops	:	
Main type of irrigation	:	
Rotation scheme	:	
Vegetation Type;The natural vegetation at the site	:	closed forest
Status of vegetation	:	

Hydrology and drainage:

Depth of groundwater table	:	cm
Groundwater Top	:	cm
Groundwater Bottom	:	cm
Kind of groundwater table	:	no groundwater table observed
Top Stagnating Layer	:	cm
Bottom Stagnating Layer	:	cm
Runoff	:	rapid
Flooding frequency	:	never
Estimated permeability (class) of least permeable part of the profile	:	high
Drainage Class	:	somewhat excessive
To Drainage Class	:	
Moisture conditions of the profile: dry from -to	:	cm
Moisture conditions of the profile: moist from -to	:	0-160 cm
Wet From - To	:	cm

Erosion and aggradation:

Soil erosion type (1st entry)	:	
Occurrence of soil aggradation	:	present
Slope Stability	:	

Remarks on Land Use / Vegetation : Scotch pine (*Pinus sylvestris*)

Surface characteristics:

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

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:

Ah 0-8 cm : Description sand, gradual wavy boundary to,

C 8-58 cm : (10YR 5.5/3, moist), Description sand, clear wavy boundary to,

Bhb 58-95 cm : very dark brown (10YR 2/2, moist), loamy very fine sand, clear wavy

BCb 95-125 : very dark brown (7.5YR 2/2, moist), loamy sand, clear wavy boundary to,

Cb1 125-153 : strong brown (7.5YR 5/8, moist), fine sand, clear wavy boundary to,

Cb2 153-160 : (10YR 6.5/3, moist), very fine sand, single grain,

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 (%)
0-8	:	-	0.2	1.6	18.3	61.3	12.3	93.7	3.3	1.4	4.7	1.6
8-30	:	-	0	0.9	15.2	70.1	10.3	96.5	1.7	0.5	2.2	1.3
30-58	:	-	0.1	1.8	18.4	65.1	11.2	96.6	2.3	0.1	2.4	1
58-95	:	-	0.3	2.1	14.7	53.2	13.8	84.1	8	3.2	11.2	4.6
95-125	:	-	0.2	2	15	58.3	13	88.5	5.7	3.1	8.8	2.7
125-150	:	1	0.9	2.6	20.1	64.6	9.5	97.7	0.6	0.4	1	1.3

Other physical data

Depth (cm)		Bulk Density (kg/dm ³)	Spec. Surf. Area (m ² /g)	COLE (cm/cm)	Water Disp. Clay (%)	Clay (%)
0-8	:	-	-	-	-	1.6
8-30	:	-	-	-	-	1.3
30-58	:	-	-	-	-	1
58-95	:	-	-	-	-	4.6
95-125	:	-	-	-	-	2.7
125-150	:	-	-	-	-	1.3

Chemical characteristics:

Depth (cm)	pH H2O	pH KCl	EC 1 : 2.5 (mS/cm)	CaCO3 (%)	Org. C (%)	Org. N (%)	C / N	Exch. Acid (cmol/kg)	Exch. Al (cmol/kg)	Ca (cmol/kg)	Mg (cmol/kg)	K (cmol/kg)	Na (cmol/kg)	Sum Cations (cmol/kg)
0-8	: 3.5	2.8	-	-	1.80	-	-	-	-	1.6	0.3	0	0.0	1.9
8-30	: 4.0	3.9	-	-	0.58	-	-	-	-	0.8	0.1	0	0.0	0.9
30-58	: 4.2	4.2	-	-	0.35	-	-	-	-	0.8	0.0	0	0.0	0.8
58-95	: 4.0	3.9	-	-	2.59	-	-	-	-	2.1	0.8	0	0.0	2.9
95-125	: 4.2	4.2	-	-	0.81	-	-	-	-	0.0	0.1	0	0.0	0.1
125-150	: 4.5	4.3	-	-	0.11	-	-	-	-	0.4	0.1	0	0.0	0.5

Depth (cm)	CEC Soil (cmol/kg)	CEC Clay (cmol/kg)	CEC Org (cmol/kg)	ECEC (cmol/kg)	Base sat. (%)	Al sat. (%)	ESP (%)
0-8	: 6.9	-	-	-	27	-	-
8-30	: 1.9	-	-	-	45	-	-
30-58	: 0.9	-	-	-	92	-	-
58-95	: 7.8	-	-	-	37	-	-
95-125	: 1.8	-	-	-	4	-	-
125-150	: 0.5	-	-	-	100	-	-

Source of analyzing procedures:

Laboratory	Attribute	Description	Proc. ref
ISRIC	Base sat.	Calculation; Sum of Exchangeable Cations (Na, K, Ca, Mg) / CEC soil	labmanual
ISRIC	Ca	Exchangeable bases with 1 M ammonium acetate at pH 7; Ca by atomic absorption spectrometry	9-4 and 9-5.3
ISRIC	CEC Soil	CEC; with index cation in buffered solution pH7	9-4 and 9-5.3.3
ISRIC	Clay; < 0.002 mm	Fraction by Pipette analysis; after removal CaCO3 and organic matter, dispersion and sedimentation	3-4.7
ISRIC	Gravel	Fraction from field sample, after drying, crushing, sieving	1-1

ISRIC	K	Exchangeable bases with 1 M ammonium acetate at pH 7; K by flame atomic emission spectrometry	9-6.1
ISRIC	Mg	Exchangeable bases with 1 M ammonium acetate at pH 7; Mg by atomic absorption spectrometry	9-4 and 9-5.3
ISRIC	Na	Exchangeable bases with 1 M ammonium acetate at pH 7; Na by flame atomic emission spectrometry	9-4 and 9-5.3
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	5
ISRIC	pH H2O	pH electrode; in supernatant suspension	4-1
ISRIC	pH KCl	In supernatant suspension; potentiometrically	4-1
ISRIC	Sand; 0.10 - 0.05 mm	Fraction by sieving; after removal CaCO3 and organic matter	3-4.6
ISRIC	Sand; 0.25 - 0.10 mm	Fraction by sieving; after removal CaCO3 and organic matter	3-4.6
ISRIC	Sand; 0.5 - 0.25 mm	Fraction by sieving; after removal CaCO3 and organic matter	3-4.6
ISRIC	Sand; 1.0 - 0.5 mm	Fraction by sieving; after removal CaCO3 and organic matter	3-4.6
ISRIC	Sand; 2.0 - 0.05 mm	Total sand fractions by sieving; after removal CaCO3 and organic matter	3-5
ISRIC	Sand; 2.0 - 1.0 mm	Fraction by sieving; after removal CaCO3 and organic matter	3-4.6
ISRIC	Silt; 0.02 - 0.002 mm	Fraction by Pipette analysis ; after removal CaCO3 and organic matter, dispersion and sedimentation	3-4.7
ISRIC	Silt; 0.05 - 0.002 mm	Calculation; Sum fractions Silt 0.05 - 0.02 mm	3-4.7
ISRIC	Silt; 0.05 - 0.02 mm	Fraction by Pipette analysis ; after removal CaCO3 and organic matter, dispersion and sedimentation	3-4.7
ISRIC	Sum cations	Sum of Exchangeable Cations (Ca, Mg, Na, K) with 1 M ammonium acetate at pH 7	9-

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

Other classification

USDA-NRCS (1999) : Typic Udipsamment

USDA-SCS (1975) : Typic Udipsamment siliceous mesic

Classification (other) :

Duinvaaggrond

WRB: Thaptospodi-Dystric Arenosol