



Description of soil profiles visited during the field trip of Czech, Slovak and Hungarian soil science societies



Soils of the Hungarian Great Plain

Kisújszállás, Karcag, Hortobágy, Vámspércs, Újfehértó
24 – 28.06.2018.

Arrival: 2018. 06.24 in University of Debrecen,

Accommodation: 3 bed rooms with shared bathrooms in University Hostels

Travel to soil profiles on 25th, 26th, and 27th June: starting at 8:00 am, from Debrecen

Profile-1: Kisújszállás, Karcagi Intézet Kutatási telep

Calcic Vertisol (WRB)

Karbonátos réti talaj (Calcaric Meadow Soil) (HSC)



Location: $\varphi = 47^{\circ}14'9.96''$ $\lambda = 20^{\circ}44'10.26''$
Elevation= 82 m

Topography: **Flat**
Landform: **Plain**
Land use: **Arable**

Annual precipitation= 510-540 mm

Aridity index= 1.3 -1.38

Temperature regime: **Mesic**

Soil moisture regime: **Aquic**

Parent material: **“infusion” loess** (deposited in water)

Depth of the ground water table: **210 cm**

Photo: J. Szabó, Desc.: E. Michéli, Data: E. Michéli



Profile Description

Ap
0-25 Dark grayish brown (actual: 10YR4/2), very dark gray (moist: 10YR3/1), coarse prismatic primary, medium blocky secondary structure. Firm, sticky, plastic. No effervescence, common roots. Few 3-6 mm hard iron manganese concretions. 1 cm wide cracks. Clear smooth boundary.

Bssg
25-55 Grayish brown (a: 10YR5/2), very dark grayish brown (m: 10YR3/2). Medium prismatic, medium blocky structure, compacted, sticky, plastic. Common 5-10 mm hard iron manganese concretions, few intersecting slickensides. Abrupt smooth boundary.

Bssgk
55-85 Light olive brown matrix (m: 2.5 Y 5/4), and with dark yellowish brown (m: 10 YR 4/6) mottles. Coarse angular blocky, common 45° slickensides, Hard, sticky, plastic. Few iron and manganese concretions. Strong effervescence. Clear smooth boundary.

Bgk
85- Light brownish gray (m: 2.5 Y 6/2) and dark yellowish brown (m: 10 YR 4/6) mottles, structureless, firm, compact, slightly sticky, plastic, effervescence.

Diagnostic horizons: **Vertic horizon, Calcic horizon**

Analytical data of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(H ₂ O)	OC (%)	CaCO ₃ (%)	y1	CEC cmol(+) kg ⁻¹	B %	Σ Salt (%)	ESP (%)
Ap	0-25	6.8	2.1	0	9.9	36.2	82	0.06	2.47
Bssg	25-55	7.6	1.3	0.5	-	39.1	94	0.09	4.14
Bssgk	55-85	8.1	n.a	15.3	-	38.4	100	0.08	4.32
Bgk	85-	8.1	n.a	7.3	-	28.9	100	0.07	4.45

Genetic horizon	Depth (cm)	% Sand 2-0.05 mm	% Clay <0.002 mm	Texture	Bulk Density (g cm ⁻³)	Field Capacity (pF 2.3) (v v ⁻¹ %)	Wilting Point (pF 4.2) (v v ⁻¹ %)	Available Water (Δ pF 2.3-pF 4.2) (v v ⁻¹ %)
Ap	0-25	17.2	44.6	C	1.32	46.6	27.8	18.8
Bssg	25-55	12.2	45.0	SiC	1.41	45.8	30.1	15.7
Bssgk	55-85	13.2	45.7	SiC	1.49	40.9	25.8	15.1
Bgk	85-	11.9	40.9	SiC	1.49	n.a	n.a	n.a

Abbreviations: *WRB*-World Reference Base, *HSC*-Hungarian Soil Classification, *OC*-Organic Carbon, *y1*-hydrolytic acidity, *CE* -Cation Exchange Capacity, *B%* -Base Saturation, *ESP*-Exchangeable Sodium Percentage

Profile-2: Karcag, MOTKA

Réti csernozjom öntés jelleggel (Meadow Chernozem with Alluvial features) (HSC)

Location: $\varphi = 47^\circ 16' 58,51''$ $\lambda = 20^\circ 52' 55,98''$
Elevation= 84 m

Topography: **Flat**
Landform: **Plain**
Land use: **Arable**

Annual precipitation= 510-540 mm

Aridity index= 1.3 -1.38

Temperature regime: **Mesic**

Soil moisture regime: **Aquic**

Parent material **“infusion” loess** (deposited in water)

Depth of the ground water table: **170 cm**

Photo: T.Tóth, Desc.: A. Makó, Data: J.Zsembeli



Profile Description

- Ap 0-20** Grayish brown (actual: 2.5Y5/2), very dark gray (moist: 5YR3/1), small angular blocky. Clay. No effervescence, some roots.
- A 20-50** Black (a: 5Y2.5/1), black (m: 5Y2.5/1). Small angular blocky. Clay. No effervescence, some roots. earthworm holes.
- B 50-70** Very dark gray (a: 5Y 3/1, m: 5Y 2.5/1). Granular, clayloam. Strong effervescence, some roots, lots of earthworm holes, crotonina, pieces of snail shell.
- BC 70-120** Light brownish gray (actual colors 2.5Y 3/2 & 10 YR 3/2, moist color 2.5Y 3/2) granular, clayloam, very strong effervescence. Lots of roots. earthworm holes, crotonina, pseudomycelia.
- C 120-170** Very dark grayish brown (actual colors 2.5 Y 4/3 and 4/4, moist color 2.5Y 4/3) not structured, clayloam, very strong effervescence. Lots of roots and earthworm holes, crotonina, pseudomycelia.
Between 0 and 50 alluvial characteristics
Between 120 and 130 calcium carbonate accumulation maximum with concretions, rust and manganese patches.,

Analytical data of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(KCl)	OC (%)	CaCO ₃ (%)	Σ Salt (%)
Ap	0-20	5,90	2,2	<0,05	0,06
A	20-40	6,67	1,7	0,3	0,04
B	40-60	6,96	1,5	0,42	0,03
BC	60-80	7,06	1,4	1,1	<0,02

Genetic horizon	Depth (cm)	% Sand	% Clay	Texture
Ap	0-20	6,90	41,20	SiC
A	20-40	6,00	45,90	SiC
B	40-60	3,60	47,00	SiC
BC	60-80	3,40	48,00	SiC

Abbreviations: *WRB*-World Reference Base, *HSC*-Hungarian Soil Classification, *OC*-Organic Carbon, *yl*-hydrolytic acidity, *CE* -Cation Exchange Capacity, *B%* -Base Saturation, *ESP*-Exchangeable Sodium Percentage

Profile-3: Karcag, Intézeti Juhászat

Mollic Solonetz (Clayic, Humic, Hypernatric) (WRB)
Kérges réti szolonyec (Crusty meadow solonetz) (HSC)



Location: $\phi = 47^\circ 17' 18,48''$ $\lambda = 20^\circ 55' 16,97''$
Elevation= 84.5 m
Topography: Flat
Landform: Plain
Land use: Pasture

Annual precipitation= 520-550 mm
Aridity index= 1.28 -1.35
Temperature regime: Mesic
Soil moisture regime: Ustic
Parent material: „Infusion” loess
Depth of the ground water table: 250 cm

Vegetation: Agrosti – Alopecuretum pratensis
Photo: T.Tóth, Desc.:T. Tóth, L. Blaskó, V. Labancz, Data: G. Tuba



Profile Description and photo on 2018

- A** Brownish black (m: 10 YR 3/2), moderately hard, very fine angular blocky structure, loam, no effervescence, lots of fine roots;
0-5
- B1** Grayish yellow brown (m: 10 YR 5/2), hard subangular columnal structure, clay loam, no effervescence, clayskin
5-20
- B2** Brownish black (m: 10 YR 3/1), medium angular blocky structure, clay, no effervescence, clayskin, maximum rooting depth is 35 cm
20-55
- BC** Brown (m: 10 YR 4/3) medium subangular blocky structure, clay, strong effervescence, CaCO₃ concretions
55-75
- C** Yellowish brown (m: 10 YR 5/6), strong effervescence, crotonas
75-145

Analytical data of a nearby profile opened earlier (G. Tuba)

Genetic horizon	Depth	pH(H ₂ O)	OC	CaCO ₃	y1	Sum of exch cations	Σ Salt	ESP
	(cm)		(%)	(%)		cmol(+) kg ⁻¹	(%)	(%)
A	0-7	5.7	2.8	< 0,05	26.16	10.53	0.02	16.0
B1	7-26	6.6	1.7	< 0,05	9,72	7.31	0.09	32.0
B2	26-65	8.2	0.9	< 0,05	0	14.61	0.36	55.4
C	65-	8.9	0.2	12,77	0	15.36	0.36	48.7

Genetic horizon	Depth	% Sand	% Clay	Texture
	(cm)	2-0.05 mm	<0.002 mm	FAO
A	0-7	7,2	31	SiCL
B1	7-26	3	46,7	SiC
B2	26-65	1,6	54,1	SiC
C	65-	1,8	34,1	SiCL

Abbreviations: WRB-World Reference Base, HSC-Hungarian Soil Classification, OC-Organic Carbon, y1-hydrolytic acidity, CEC -Cation Exchange Capacity, ESP-Exchangeable Sodium Percentage

Profile-4: Hortobágy-Görbehát, PSTC4

Protocalcic Gleyic Solonetz (WRB)

Kérges réti szolonyec (Crusty shallow meadow solonetz) (HSC)

Location: $\phi = 47^{\circ}34'15.24''$ $\lambda = 21^{\circ}15'25.62''$

Elevation= 88 m

Topography: Flat

Landform: Plain

Land use: Pasture

Vegetation: Artemisia - Festucetum pseudovinae association

Photo: J. Szabó, Desc.: J. Szabó, Data: J. Szabó



Annual precipitation= 520-550 mm

Aridity index= 1.28 -1.35

Temperature regime: Mesic

Soil moisture regime: Ustic

Parent material: „Infusion” loess

Profile Description

- A** Pale brown (actual: 10 YR 7/2, moist: 10 YR 6/3), dry, structureless, loam, approx. 25 % clay content, loose, no effervescence and phenolphthalein reaction, many very fine roots; well distributed, humus deposit around roots, boundary: abrupt and smooth.
- 0-9**
- Btn1** Brownish black (a: 10 YR 4/3, m: 10 YR 3/2), dry, medium subangular blocky structure, clay loam, approx. 35 % clay content, slightly hard, strong effervescence but the matrix has no reaction, slight phenolphthalein reaction, many very fine pores, common fine roots, vertical carbonate coating on peds, boundary: clear and smooth.
- 9-26**
- Btn2** Grayish yellow (a: 10 YR 3/2, m: 10 YR 4/2), dry, strong angular blocky structure, clay loam, approx. 35 % clay content, hard, slight effervescence and phenolphthalein reaction, many very fine pores, common very fine roots, well distributed calcium carbonate coating, humus skins, boundary: clear and irregular.
- 26-40**
- BC** Grayish yellow (a: 10 YR 4/3, m: 10 YR 6/2), dry, strong angular blocky structure, loam, approx. 30 % clay content, hard, strong effervescence and phenolphthalein reaction, many very fine pores, few very fine roots, humus skins around roots, carbonate coats, boundary: gradual and wavy.
- 40-56**
- C** Bright yellowish brown (a: 2.5 Y 7/8, m: 2.5 Y 6/6), very slightly moist, silt loam, hard, strong effervescence and phenolphthalein reaction, many very fine pores, carbonate coatings.
- 56-95**

Diagnostic horizons: Natric horizon, Calcic horizon

Analytical data of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(H ₂ O)	OC (%)	CaCO ₃ (%)	CEC cmol(+) kg ⁻¹	B %	Σ Salt (%)	ESP (%)
A	0-9	8.4	0.9	0.0	13.0	92	0.08	0.6
Btn1	9-26	9.3	0.7	3.1	20.6	94	0.15	17.2
Btn2	26-40	9.8	0.5	4.1	21.0	100	0.17	19.3
BC	40-56	10.1	0.3	14.0	43.5	100	0.14	16.4
C	56-95	n.a.	n.a.	14.5	33.7	100	0.10	8.3

Genetic horizon	Depth (cm)	% Sand	% Clay	Texture	Bulk Density (g cm ⁻³)	Field Capacity (pF 2.3) (v v ⁻¹ %)	Wilting Point (pF 4.2) (v v ⁻¹ %)	Available Water (Δ pF 2.3-pF 4.2) (v v ⁻¹ %)
A	0-9	6.46	20.67	SiL	1.48	46.9	32.3	14.6
Btn1	9-26	6.46	30.75	SiCL	1.52	45.3	35.0	10.3
Btn2	26-40	7.40	35.18	SiCL	1.57	44.8	35.9	8.9
BC	40-56	5.27	33.90	SiCL	1.59	43.6	30.9	12.7
C	56-95	6.71	27.94	SiCL	1.63	42.5	32.2	10.3

Abbreviations: WRB-World Reference Base, HSC-Hungarian Soil Classification, OC-Organic Carbon, y1-hydrolytic acidity, CE -Cation Exchange Capacity, B%-Base Saturation, ESP-Exchangeable Sodium Percentage

Profile-5: Hortobágy-Szálkahalom, PSTC5-2007

Calcic Chernozem (WRB)

Mélyben sós alföldi mészlepedékes csernozjom (Chernozem, salty in the deeper layer) (HSC)



Location: $\varphi = 47^{\circ}34' 54.066''$ $\lambda = 21^{\circ}15' 05.610''$

Elevation: 89 m

Topography: Flat, higher position

Landform: Plain (rel. top)

Land use: Pasture

Vegetation: Achilleo - Festucetum pseudovinae ass.

Annual precipitation: 520-550 mm

Aridity index: 1.28 -1.35

Temperature regime: Mesic

Soil moisture regime: Ustic

Parent material: „Infusion” loess

Groundwater depth: 510 cm

Photo: J. Szabó, Desc.: J. Szabó, Data: J. Szabó



Profile Description

- Ap 0-20** Brownish black (a: 10 YR 3/3, m: 10 YR 2/2), dry, strong fine subangular blocky structure, loam, approx. 30 % clay content, slightly hard, slight effervescence, common very fine pores, many very fine and few fine roots; wormholes, boundary: clear and smooth.
- A 20-50** Black (a: 10 YR 2/2, m: 10 YR 2/1), dry, strong medium subangular blocky structure, clayey loam, approx. 35 % clay content, hard, no effervescence, many very fine pores, common very fine roots, boundary: abrupt and smooth.
- Bk 50-95** Brownish black (a: 10 YR 3/3, m: 10 YR 3/2), dry, moderate fine subangular blocky structure, loam, approx. 30 % clay content, hard, strong effervescence, many very fine pores, few very fine roots, abundant pseudomycelia of calcium carbonate, biogalleries, wormholes and wormcasts, snails, boundary: abrupt and smooth.
- BCK 95-110** Dry, structureless loam, approx. 30 % clay content, hard, violent effervescence, many very fine pores, crotovinas, loess shells, boundary: gradual.
- Ck 110-** Dull yellow (a: 2.5 Y 7/4, m: 2.5 Y 6/4), dry, structureless, loam, approx. 30 % clay content, hard, strong effervescence, many very fine pores, concretions of calcium carbonate, crotovinas.

Diagnostic horizons: Mollic horizon, Calcic horizon

Analytical data of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(H ₂ O)	OC (%)	CaCO ₃ (%)	y1	K _A	Texture	CEC cmol(+) kg ⁻¹	B %	Σ Salt (%)	ESP (%)
							HUN, based on K _A				
Ap	0-20	7.44	2.9	1.94	-	49	Clayey loam (up to 50 K _A)	n.a	n.a	<0.02	n.a
A	20-50	7.84	2.3	3.96	-	45	Clayey loam	n.a	n.a	<0.02	n.a
Bk	50-95	8.41	0.9	17.65	-	49	Clayey loam	n.a	n.a	0.12	n.a
BCK	95-110	9.15	0.2	15.5	-	49	Clayey loam	n.a	n.a	0.10	n.a
Ck	110-	9.27	0.2	12.7	-	51	Clay (from 50 K _A)	n.a	n.a	0.20	n.a

Abbreviations: WRB-World Reference Base, HSC-Hungarian Soil Classification, OC-Organic Carbon, y1-hydrolytic acidity, K_A-Plasticity index, CE -Cation Exchange Capacity, B%-Base Saturation, ESP-Exchangeable Sodium Percentage

Profile-6: Vámospércs, Szőlőhegy

Calcaric, Lamellic, Brunic Arenosol (WRB2014)

Kovárványos barna erdőtalaj (Lamellic Brown Forest Soil) (HSC)

Location: $\varphi = 47^\circ 32' 19.37''$ $\lambda = 21^\circ 53' 38.27''$

Elevation= 134 m

Annual precipitation= 550-600 mm

Aridity index= 1.2-1.3

Topography: **Flat**

Landform: **Plain (local summit: sand dune)**

Land use: **Afforestation(*Robinia pseudoacacia*)**

Temperature regime: **Mesic**

Soil moisture regime: **Ustic**

Parent material: **Aeolian sand**

Depth of the ground water table: **n.d.**

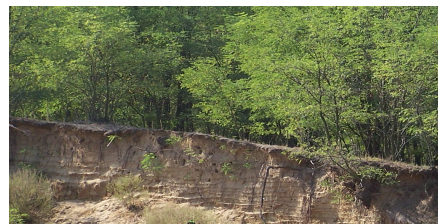


Photo: T. J. Novák; Desc.: T. J. Novák



Profile Description

Ah	0-35	Slightly humus-enriched horizon, fine sand, dark brown, dark yellowish brown (10YR 3/3; 10YR 3/4), dry, very weak granular structure, fine and common roots, gradual smooth boundary.
Bw	35-65	Transitional horizon, fine sand, dark yellowish brown (10YR3/4; 10YR 4/4), dry, very weak subangular blocky structure, very fine few roots, gradual wavy boundary.
E	65-100	Eluvial horizon, fine sand, yellowish brown (10YR 4/3; 10YR 5/4), dry, single grain structure, abrupt and wavy boundary.
Bt	100-102	Lamellic accumulation of ironhydroxides, fine sand, dark yellowish brown (10YR 3/6; 10YR 4/4), dry, weakly cemented, massive structure, abrupt and wavy boundary.
E2	102-112	Interlamella, eluvial horizon, fine sand, light yellowish brown (10YR 6/4; 10YR 4/4), dry, single grain structure, abrupt and wavy- irregular boundary.
Bt2	112-113	Lamella
E3	113-125	Interlamella
Bt3	125-130	Lamella
E4	130-150	Interlamella

Analytical data and profile photo of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(H ₂ O)	OC (%)	CaCO ₃ (%)	CEC cmol(+) kg ⁻¹	B %
Ah	0-35	5.2	0.53	-	11.9	62
Bw	35-60	4.4	0.33	-	10.0	69
E	60-65	4.7	0.30	-	9.1	87
Bt	65-100	6.7	0.12	3.6	11.7	78
E2	102-102	6.7	0.07	2.8	11.9	77
Bt2	102-112	6.5	0.03	2.2	9.9	86
E3	112-113	6.3	0.03	2.6	8.0	66

Genetic horizon	Depth (cm)	% Coarse and medium sand	% Fine sand	% Silt	% Clay	Texture	Fe (LE-extr.) (mg kg ⁻¹)	Mn (LE-extr.) (mg kg ⁻¹)
Ah	0-35	19	75	5	2	(F)S	6	9
Bw	35-60	20	74	4	3	(F)S	8	10
E	60-65	22	72	3	3	(F)S	8	11
Bt	65-100	14	76	3	7	(F)S	17	18
E2	102-102	11	85	2	2	(F)S	9	12
Bt2	102-112	20	68	4	9	L(F)S	19	21
E3	112-113	19	77	2	3	(F)S	8	11

Abbreviations: WRB-World Reference Base, HSC-Hungarian Soil Classification, OC-Organic Carbon, y1-hydrolytic acidity, CE -Cation Exchange Capacity, B% -Base Saturation, ESP-Exchangeable Sodium Percentage

Profile-7: Vámospércs, Szőlőhegy-alja

Mollic-Calcaric Gleysol (WRB2014)
Réti talaj (Meadow Soil) (HSC)



Location: $\varphi = 47^{\circ}32'19.21''$ $\lambda = 21^{\circ}53'44.99''$
Elevation= 130 m

Topography: **Flat**
Landform: **Plain (local depression)**
Land use: **Meadow (*Salix* sp.)**

Annual precipitation= 550-600 mm

Aridity index=1.2-1.3

Temperature regime: **Mesic**

Soil moisture regime: **Udic**

Parent material: **Aeolian dust over fluvio-aeolian sand**

Depth of the ground water table: **140 cm**

Photo: T. Novák; Desc.: T. J. Novák



Profile Description

Ah
0-35 Mollic horizon, fine sandy loam, very dark grayish brown, very dark brown (10YR 3/2; 10YR 2/1), moderate granular medium size structure, common fine and very fine reddish-brown crack and pore infillings (7.5YR), gradual smooth boundary;

Ahk
35-82 Fine sandy loam, very dark grayish brown/ very dark brown (10YR 2/2; 10YR 2/1), slightly moist, moderate granular-subangular blocky medium size structure, few fine reddish-brown crack and pore infillings, carbonates (+++), gradual wavy boundary

ACk
82-105 Transitional horizon, loamy fine sand, dark grayish brown, very dark grayish brown (2.5Y 4/2; 2.5Y 2.5/1), gleyic color pattern, moist, no structure (single grains), carbonates (++) gradual and broken lower boundary

2Cr
105-120 Sand, olive gray, greenish gray (2.5Y 4/2; 2.5Y 5/3), wet, no structure (single grains) reducing conditions, no carbonates

Diagnostics: Mollic horizon, Gleyic color pattern, Calcaric material

Analytical data and profile photo of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(H ₂ O)	OC (%)	CaCO ₃ (%)	CEC cmol(+) kg ⁻¹	B %	EC _{1:2.5} (dS m ⁻¹)	ESP (%)
Ah	0-35	6.3	6.4	0	45.3	67	0.62	0
Ahk	35-82	6.9	1.8	11.4	30.2	70	0.92	0
ACk	82-105	7.8	0.5	7.5	21.8	86	0.21	1
2Cr	105-120	7.2	0.1	1.7	11.2	100	0.12	2

Genetic horizon	Depth (cm)	% Coarse and medium sand	% Fine sand	% Silt	% Clay	Texture
		2-0.2 mm	0.2-0.05 mm	0.05-0.002 mm	<0.002 mm	FAO
Ah	0-35	8	51	35	6	(F)SL
Ahk	35-82	9	58	21	12	(F)SL
ACk	82-105	7	70	18	5	L(F)S
2Cr	105-120	47	51	0	2	S

Abbreviations: WRB-World Reference Base, HSC-Hungarian Soil Classification, OC-Organic Carbon, y1-hydrolytic acidity, CE -Cation Exchange Capacity, B%-Base Saturation, ESP-Exchangeable Sodium Percentage

Profile-8: Újfehértó

Calcic-Stagnic-Gleyic Solonchak (WRB2014) *Szoloncsák (Solonchak) (HSC)*

Location: $\varphi = 47^{\circ}47'34.32''$, $\lambda = 21^{\circ}41'19.12''$

Elevation: 116 m

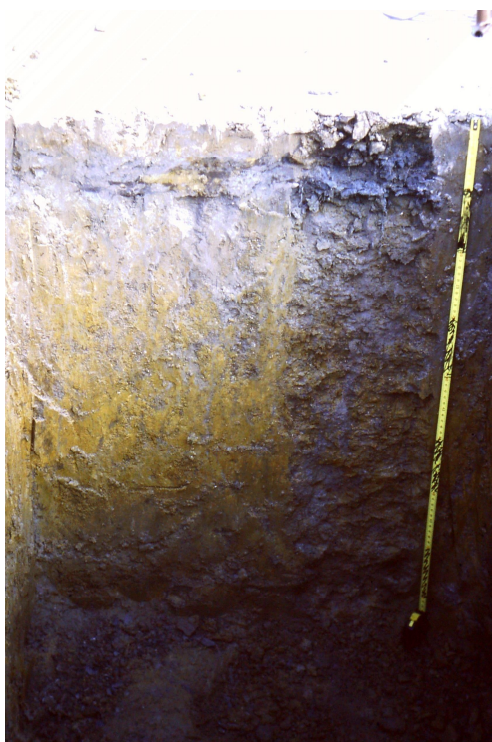
Topography: **Flat**

Landform: **Plain**

Land use: **Pasture**

Vegetation: *Kochia scoparia*, *Puccinellia limosa*

Photo, Desc, Data: T.Tóth



Annual precipitation: 520-550 mm

Aridity index: 1.28 -1.35

Temperature regime: **Mesic**

Soil moisture regime: **Ustic**

Parent material: **Alluvial sediments**

Water table: **at 150 cm (EC5,45 dSm⁻¹, pH8)**

Profile Description

- 1**
0-4 Olive (moist: 5Y5/3), sandy loam, platy, strong effervescence lots of narrow roots. On surface salt florescence, ECa 4,4 dSm⁻¹
- 2**
4-14 Olive (m: 5Y5/3), clayloam, angular blocky structure, lots of narrow roots, strong effervescence, pieces of snail shell.
- 3**
14-40 Light olive brown (m: 2.5Y5/4), subangular blocky structure, loam, few roots, strong effervescence, pieces of snail shell.
- 4**
40-85 Light olive brown (m: 2.5Y5/6), subangular blocky structure, loam, no roots, effervescence, pieces of snail shell.

Analytical data and profile photo of a nearby profile opened earlier

Genetic horizon	Depth (cm)	pH(H ₂ O)	OC (%)	CaCO ₃ (%)	CEC cmol(+) kg ⁻¹	EC (dS m ⁻¹)	SAR
1	0-4	10.2	0.46	6.7	6.3	20.0	684
2	4-14	10.4	0.23	11.0	9.0	8.0	223
3	14-40	10.3	0.22	37.0	11.0	4.7	160
4	40-85	10.3	0.12	26.0	11.0	3.5	111

Genetic horizon	Depth (cm)	% Sand	% Clay	Texture
		2-0.05 mm	<0.002 mm	FAO
1	0-4	61.9	10.3	SL
2	4-14	44.7	21.8	CL
3	14-40	35.4	28.8	L
4	40-85	27.5	22.8	L

Abbreviations: *WRB*-World Reference Base, *HSC*-Hungarian Soil Classification, *OC*-Organic Carbon, *CEC* -Cation Exchange Capacity, *SAR*-Sodium Adsorption Ratio