

Appendix B

Examples

HISTOSOLS

Rhei-gelic Histosol with a hemic topsoil
 Loc.: Kola Peninsula, Federation of Russian States
 Thickness: 30 cm
 Ref.: Polyntseva (1962), p. 66, prf. 187

0-38 cm H Medium to strongly decomposed sedge peat, consisting of scraps of sedge rootlets, occasional pieces of epidermis and some scraps of horsetail rhizomes.

Cm	pH		OC %	N %	C/N	BD Mg m ⁻³	Exchangeable bases cmol(+)kg ⁻¹ soil			
	H ₂ O	Salt.sol					Ca	Mg	H	NH ₄ ⁺
0-5	5.1	4.3	nd	nd	nd	0.25	43.4	7.2	17.3	0.3
10-15	5.4	4.6	48.4	2.2	22	0.23	nd	nd	nd	nd
20-25	5.7	4.9	nd	nd	nd	0.22	82.4	9.7	8.7	0.4

Note: arctic is not used as this is implied by gelic; hemic is used to specify degree of decomposition.

Rhei-sapric Histosol with an hydric topsoil
 Loc.: Slievenkilla Td., County Leitrim, Republic of Ireland
 Thickness: 30 cm
 Ref.: Hammond R.F. (1979), p. 53/4

0-60 cm H Dark reddish brown (5YR 3/2) peat; well-humified; greasy; recent roots to at least 50 cm depth.

cm	pH H ₂ O	BD Mg m ⁻³	Ash %	N %	Moisture		Rubbed fiber %
					field	satur.	
0-30	4.2	0.09	4.2	2.52	85.1	1171	1.0

Note: hydric is used to indicate low bulk density; sapric is not used as it is indicated in the classification.

Eutri-sapric Histosol with a drained, brunic topsoil

Loc.: Dane County, Wisconsin, USA

Thickness: 30 cm

Ref.: Lee G.B. and Bamrung Manoch (1974)

Note: Soil has been drained since about 1910.

0-20 cm	O1	Black (5YR-10YR 2/1 to N2/) muck; ca. 5 % unrubbed fiber; weak medium subangular blocky, parting to moderate medium and fine granular; soft and very friable moist.
20-25 cm	O2	Black (5YR 2/1) and dark reddish brown (5YR 2/2) muck; low fiber content; moderate very coarse prismatic, parting to moderate coarse platy;
25-36 cm	O3	Black (5YR 2/1) and dark reddish brown (5YR 2/2) muck; low fiber content; moderate very coarse and medium prismatic, wedged-shaped; firm.

cm	pH	OC %	N %	C/N	BD Mg m ⁻³	Fiber %	Ash %	SPEC (*) 10YR
0-20	5.7	55.8	4.3	13	0.32	3	26.2	5/4
20-25	5.7	55.8	3.7	15	nd	nd	13.4	6/3
25-36	5.8	57.7	4.2	14	nd	7	24.5	5/3

SPEC (*) = sodium pyrophosphate extract colour.

Note: drained is used to indicate artificial drainage. Topsoil qualifies for brunic because of pH and the granular structure.

CRYOSOLS**Hapli-gleyic Cryosol** with a silty, redoxic, organi-brunic topsoil

Loc.: 6 km NW of Fairbanks, Alaska, USA

Thickness: 30 cm

Ref.: Rieger S. et al. (1979), p. 40

0-12 cm	O	Very dark brown (10YR 2/2) mat of moss and roots.
12-20 cm	Ahg	Very dark grayish brown (10YR 3/2) and dark gray (5Y 4/1) silt loam; weak very thin platy, parting to weak very fine granular; friable moist; many roots.
20-40 cm	Bg	Dark gray (5Y 4/1) silt with many medium distinct dark brown mottles; weak very thin platy, parting to weak very fine subangular blocky; friable moist, nonsticky wet.

cm	Particle size distribution			OC %	N %	C/N
	Sand	Silt	Clay			
0-12	nd	nd	nd	36.38	1.212	30
12-20	8	76	15	11.51	0.399	29
20-40	4	80	17	1.62	0.081	20

cm	PH H ₂ O 1:1	Exchangeable bases				CEC		BS %
		Ca	Mg	K	Na	(NH ₄ OAc)	Extr. ac.	
0-12	5.4	nd	nd	nd	nd	nd	nd	nd
12-20	5.7	24.3	11.8	0.5	0.3	40.5	27.2	91
20-40	6.9	14.7	7.6	0.1	0.4	22.3	6.4	100

Note: arctic is not used as this is implied by Cryosol; redoxic is used to indicate periodic saturation as evidenced by the reduction colours and many mottles; organi-brunic is used to indicate the thick (>10 cm) mat of moss and roots on top of a brunic layer; neutral is used although it is redundant with brunic to indicate the neutral soil reaction of the organic layer.

Haplic Cryosol with a neutral, sandy topsoil

Loc.: Grandview Hills, Yukon, Canada

Thickness: 30 cm

Ref.: Zoltai and Pettapiece (1973), p. 89/90

0-2 cm	O	Dark gray (10YR 3/1, dry) loose organic material.
2-6 cm	A	Pinkish gray (10YR 6/2, dry) coarse sandy loam; single grained; loose dry, friable moist.
6-22 cm	Bu1	Yellowish red (5YR 4/8, moist) sandy loam to loamy sand; single grained; friable moist.
22-37 cm	Bu2	Strong brown (10 - 7.5YR 5/6, moist) loamy sand; single grained; loose dry.

cm	Particle size distribution			OC %	pH CaCl ₂	BS %
	Sand	Silt	Clay			
2-6	68	30	2	0.78	5.3	25
6-22	76	14	10	0.44	5.3	20

Note: arctic is not used as this is implied by the Cryosol classification.

ANTHROSOLS

Plaggic Anthrosol with a sandy topsoil

Loc.: Deventer, Province of Overijssel, The Netherlands

Thickness: 30 cm

Ref.: Stiboka (1979), p.84

0-40 cm Ap Black (10YR 2/1) loamy sand; loose.

cm	Particle size distribution						Pt %
	Sand				Silt	Clay	
	2-0.2	0.2-0.15	0.15-0.1	0.1-0.05			
0-40	30	18	17	12	17	6	0.17

cm	Humus %	C/N	pH KCl	Sum of Cations	Extr. H cmol(+)	Sum of Bases kg ⁻¹ soil	BS %
0-40	3.7	14	4.4	8.5	5.8	14.4	59

Note: Plaggen is not used as this is already mentioned in the classification.

Regi-irragric Anthrosol with a loamy, salsic topsoil

Loc.: Sadah, Sadah Province, Yemen

Thickness: 30 cm

Ref.: King et al. (1983), p. 420/2

Note: 157 cm of deposits through spate irrigation is recorded.

0-22 cm	C	Dark yellowish brown (10YR 3/6, moist) sandy loam; strong coarse prismatic; strongly calcareous.
22-57 cm	2C	Dark yellowish brown (10YR 3/6, moist) sandy loam; strong coarse prismatic; soft dry, friable moist, slightly sticky and plastic wet; strongly calcareous.

cm	Particle size distribution			pH H ₂ O	Org. mat. %	CEC Cmol(+) kg ⁻¹ soil	CaCO ₃ %	EC dS m ⁻¹
	Sand	Silt	Clay					
0-22	73	22	5	7.5	1.25	15	7.8	0.31
22-57	73	22	5	6.9	1.48	38	8.8	6.50

Note: salsic is used to indicate the intermediate salinity between 22 and 30 cm depth.
Cumulic is not used as topsoil property as this is already implied in the classification.

LEPTOSOLS**Eutri-lithic Leptosol** with a loamy, melanic topsoil

Loc.: Kassab, Lattakia Province, Syria

Thickness: 7 cm

Ref.: Directorate of Soils, MAAR (1982), p. 17/8

0-7 cm	Ah	Very dark brown (10YR 2/2, moist) sandy loam; moderate medium subangular blocky, parting to moderate fine granular; hard dry, friable moist, slightly sticky and slightly plastic wet.
7+ cm	R	Lithic contact with volcanic rocks.

cm	Particle size distribution			pH H ₂ O	OC %	CEC (NaOAc) cmol(+) kg ⁻¹ soil
	Sand	Silt	Clay			
0-7	70	17	13	6.5	3.3	70

Note: melanic is used to indicate the appreciable accumulation of OM under near neutral conditions; the topsoil properties border chernic, but lack the structural requirements; shallow is not used as this is indicated by lithic.

Hapli-rendzic Leptosol with a loamy topsoil

Loc.: Goulvany par Courdemanges, Marne, France

Thickness: 30 cm

Ref.: FAO-Unesco (1981), p.118/9

0-18/20 cm	Ap	Very dark grayish brown (10YR 3/2, moist) calcareous loam; moderate fine to medium granular; loose dry, very friable moist.
18/20-30/35 cm	AC	White weathered limestone loam.

cm	Particle size distribution					pH H ₂ O	OC %	N %	C/N
	CF	CS	FS	Silt	Clay				
0-18/20	44	5	11	44	31	7.9	4.7	0.4	12
18/20-30/35	82	14	8	42	32	8.4	Nd	nd	nd

cm	Exchangeable bases					CEC (NH ₄ OAc)	BS %
	Ca	Mg	K cmol(+) kg ⁻¹ soil	Na			
0-18/20	42	1.1	1.1	0.3		44.5	100

Note: rendzic is not used as this is already indicated in the classification.

Hapli-eutric Leptosol with a loamy topsoil

Loc.: Province of Sevilla, Spain

Thickness: 25 cm

Ref.: INIA (1975), p.236/7

0-1 cm	O	Organic litter layer.
1-4 cm	Ah	Dark red (2.5YR 3/6) sandy loam; strong medium and coarse crumb.
4-25 cm	B	Dark red (2.5YR 3/6) sandy loam; columnar when dry, crumb when moist; slightly hard dry.
25 cm	R	Lithic contact.

cm	Particle size distribution			OC %	N %	C/N	CaCO ₃ %
	Sand	Silt	Clay				
1-4	69	12	19	0.88	0.08	11	1.4
4-25	57	25	18	0.65	0.08	8	1.8

Cm	pH H ₂ O	Exchangeable bases				
		Ca	Mg	K cmol(+) kg ⁻¹ soil	Na	CEC
1-4	7.3	6.1	0.5	0.2	0.07	7.0
4-25	7.1	14.1	0.6	0.2	0.09	6.0

Note: brunic is not used as structures are too strong. Most likely this soil is eroded, in which case "truncated" can be added. No data, however, were found to substantiate this.

VERTISOLS

Eutri-grumic Vertisol with an natric, clayey, crusting and self-mulching topsoil

Loc.: Hag Abudalla, South Gezira, Sudan

Thickness: 30 cm

Ref.: FAO (1985), p. 196/8

0-4 cm	Ah1	Dark grayish brown (10YR 4/2, moist) clay; soft platy crust on surface underlain by strong medium granular structure; slightly hard dry, friable moist, sticky and plastic wet; calcareous.
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4-25 cm	Ah2	Very dark grayish brown (10YR 4/1.5, moist) clay; strong coarse prismatic parting to moderate medium and coarse subangular blocky; extremely hard dry, friable moist, sticky and plastic wet; calcareous.
25-45 cm	B	Very dark grayish brown (10YR 4/1.5, moist) clay; moderate medium subangular blocky, parallelepiped; very hard dry, firm moist, sticky and plastic wet; calcareous.

cm	Particle size distribution				OC %	N %	C/N	pH		CaCO ₃ %
	CS	FS	Silt	Clay				paste	H ₂ O	
0-4	9	11	25	55	0.13	0.045	3	8.1	8.9	1.3
4-25	7	12	24	57	0.41	0.035	12	8.2	8.9	1.4
25-45	9	12	23	56	0.47	0.035	13	8.4	9.3	1.2

cm	Exchangeable bases				CEC	EC DS m ⁻¹	SAR	ESP
	Ca	Mg	Na cmol(+) kg ⁻¹ soil	K				
0-4	nd	nd	4.12	1.5	55	0.16	5	7
4-25	nd	nd	7.81	1.4	57	0.60	4	14
25-45	nd	nd	13.79	1.1	52	1.32	10	27

Note: self-mulching is used as this is not directly implied by grumi-.

FLUVISOLS

Gleyi-orthithionic Fluvisol with an clayey, hydri-redoxic and sulfic topsoil
 Loc.: Bang Pakong, Thailand
 Thickness: 30 cm
 Ref.: Breemen (1976), p. 168/9

Note: occasional flooding by brackish water and rainwater.

0-10 cm	Ah	50% dark grayish brown (10YR 4/2, moist) and 50% (dark) brown (10YR 4/3, moist) silty clay; many coarse faint dark reddish brown (5YR 4/3, moist) mottles; weak coarse angular blocky; sticky and non-plastic wet.
10-18 cm	Bu1	70% dark grayish brown (10YR 4/2, moist) and 30% (dark) brown (10YR 4/3, moist) silty clay; many coarse distinct reddish brown (5YR 4/3-4, moist) mottles; weak coarse angular blocky; sticky and non-plastic wet.
18-30 cm	Bu2	Dark grayish brown (10YR 4/2, moist), locally very dark gray (10YR 3/1, moist) silty clay; many coarse distinct reddish brown (10YR 4/3-4, moist) glossy coatings on pore walls; few jarosite mottles; weak coarse prismatic; slightly sticky and non-plastic wet.

cm	Particle size distribution			OC %	N-value	BD Mg m ⁻³
	Sand	Silt	Clay			
0-10	1	50	49	1.7	0.88	1.06
10-18	1	43	57	2.7	1.04	0.87
18-30	1	41	58	3.5	1.32	0.66

cm	PH	
	fresh	Aerated
0-5	5.5	4.8
5-10	4.2	4.3
10-15	3.3	3.2
15-20	3.1	2.8
20-25	3.4	2.4
25-30	3.8	2.1

cm	Watersoluble SO ₄ -S in %	Pyrite-S %	Total-S %
0-20	0.05	0.01	0.06
20-40	0.11	1.11	1.22

Note: Sulfic is used as topsoil already contains more than 0.75 % S, which is not implied by orthithionic. Jarositic is not used because mottles are too few. Redoxic is used because of many brown mottles, while the topsoil is also hydric (n-value >0.7). Modic is not used as the combination hydri-redoxic and sulfic better characterizes the topsoil.

Calcari-hyposodic Fluvisol with a loamy, calci-halic topsoil

Loc.: Al Khawkhak, Yemen

Thickness: 30 cm

Ref.: King et al. (1983), p. 336/8

0-5 cm	Ah	Brown (10YR 4/3, moist) loam; strong medium platy; slightly hard dry, friable moist, slightly sticky and slightly plastic wet; strongly calcareous.
5-15 cm	2Ah	Brown (10YR 5/3, moist) loamy sand; strong coarse subangular blocky; hard dry, friable moist, slightly sticky and non-plastic wet; strongly calcareous.
15-33 cm	3Ah	Pale brown (10YR 6/3, moist) sandy loam; strong coarse subangular blocky; slightly hard dry, friable moist, sticky and plastic wet; strongly calcareous.

cm	Particle size distribution			pH H ₂ O	EC dS m ⁻¹	Org. mat. %	CaCO ₃ %
	Sand	Silt	Clay				
0-5	49	38	13	7.6	6.5	1.18	16.6
5-15	79	16	5	7.5	17.5	0.96	18.6
15-33	57	38	5	7.5	9.9	2.20	24.3

Note: The crusting requirement is not met as the percentage sand is too high; the platy structure in the top is probably due to the fluvic characteristics; calcic is used, because topsoil has > 15 % CaCO₃ (not implied by calcari-), while halic is used as between 5 and 15 cm the EC is > 15 dS m⁻¹.

SOLONCHAKS

Hypersali-sodic Solonchak with a clayey, crusting calci-halic topsoil

Loc.: Lower Tigris terrace, east of Chay Khanah, Iraq

Thickness: 30 cm

Ref.: Altaie (1968), p.128/130

0-2 cm	Az1	Dark brown (7.5YR 4/3, moist) silty clay; weak coarse platy; friable dry, sticky and plastic wet; calcareous.
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2-5 cm	Az2	Dark brown (7.5YR 4/3, moist) silty clay; moderate granular; friable dry, sticky and plastic wet; calcareous.
5-25 cm	Bz1	Reddish brown (5YR 4/4, moist) silty clay; massive; firm moist, sticky and plastic wet; calcareous.
25-50 cm	Bz2	Reddish brown (5YR 4/4, moist) silty clay; moderate medium subangular blocky; hard dry, firm moist, sticky and plastic wet; calcareous.

Cm	Particle size distribution			OC %	PH Paste	CaCO ₃	Gypsum %
	Sand	Silt	Clay				
0-5	5	52	43	0.30	7.4	22.7	0.2
5-25	3	45	52	0.53	7.3	21.8	1.4
25-50	2	49	49	0.49	7.2	21.1	1.8

Cm	EC dS m ⁻¹	Exchangeable bases				CEC	ESP
		Ca	Mg	K	Na		
0-5	46.9	nd	nd	0.5	2.6	21.4	12
5-25	59.2	nd	nd	0.4	2.0	26.1	8
25-50	50.5	nd	nd	0.4	5.1	23.8	21

Note: The arid requirement is not met as the exchangeable K percentage is < 5; crusting property is used as the topsoil meets sand and silt and the CEC requirement; it is corroborated by the presence of a platy structure; calci-halic is used as the topsoil has > 15 % CaCO₃ and has an EC of > 15 dS m⁻¹ (depth of both properties is not reflected in the classification).

Aridi-sodic Solonchak with an natric, clayey, crusting and halic topsoil
 Loc.: San Bernardino County, California, USA
 Thickness: 30 cm
 Ref.: Soil Survey Staff (1975), p. 566/7

0-5 cm	C	Yellowish brown (10YR 5/4, moist) clay; very fine subangular blocky; very hard dry, firm moist.
5-15 cm	Cn1	Yellowish brown (10YR 5/4, moist) clay; very fine granular; soft dry, very friable moist.
15-25 cm	Cn2	Dark yellowish brown (10YR 4/4, moist) silty clay; moderate very fine to medium granular; slightly hard dry, friable moist.
25-58 cm	Cn3	Brown (10YR 5/3, moist) clay; weak fine subangular blocky; very hard dry, firm moist.

cm	Particle size distribution						OC %	N %	C/N	
	VCS	CS	MS	FS	VFS	Silt				Clay
0-5	0.2	0.5	0.5	4	7	25	62	0.10	0.013	8
5-15	0.1	0.4	0.6	3	6	25	65	0.17	0.012	14
15-25	0.3	0.5	0.5	3	5	45	46	0.20	0.013	15
25-58	0.1	0.2	0.3	2	4	30	64	0.16	0.015	11

cm	pH		K	Exchangeable bases	
	H ₂ O 1:10	Sat. paste		Na	CEC
0-5	9.8	8.6	6.2	20.2	33.0
5-15	9.1	8.5	6.2	24.5	32.8
15-25	9.0	8.4	5.3	28.6	31.3
25-58	9.4	8.4	6.2	24.5	33.7

cm	EPP	ESP	SAR	EC dS m ⁻¹	Salt %	CaCO ₃ %	Gypsum %
0-5	19	61	107	10.8	0.3	14	-
5-15	19	75	352	92.6	3.9	14	0.73
15-25	17	91	399	99.0	4.1	14	2.06
25-58	18	73	181	63.8	2.5	17	0.09

Note: topsoil meets the requirements for crusting, although the presence of a crust is not given in the profile description; topsoil does not qualify for duric as only the surface layer is very hard when dry. Both halic and sodic properties apply to the topsoil and choice has to be made to limit the modifiers to three. Because of the presence of free salts halic has been chosen.

GLEYSOLS

Andi-anthraquic Gleysol with a loamy, brunic topsoil

Loc.: Tanigashira, Miyakonojo-shi, Japan

Thickness: 30 cm

Ref.: Wada K. (Ed.) (1986), p. 216-221

0-18 cm	Ap	Black (10YR 1.85/1, moist) clay loam; weak fine angular blocky; very friable moist, sticky and plastic wet; many roots; few fine pores; few pumices.
18-30 cm	Ahg	Black (10YR 1.85/1, moist) clay loam to light clay; massive; friable moist, sticky and plastic to very plastic wet; common roots; few fine pores; common thready iron mottles; common pumices.

cm	Particle size distribution				CF %	OC %	N %	C/N	BD Mg m ⁻³	AL(p) Al(o)
	CS	FS	Silt	Clay						
0-18	19	39	19	24	1.1	6.1	0.47	13	0.69	0.24
18-30	19	39	18	24	2.2	5.3	0.38	14	0.87	0.17

cm	H ₂ O	pH		Exchangeable bases				CEC (NH ₄ OAc)	BS %
		KCl	NaF	Ca	Mg	K	Na		
0-18	5.8	4.9	10.0	8.0	1.4	0.2	0.2	21.7	45
18-30	5.9	5.0	10.3	7.1	1.2	0.2	0.3	20.4	43

Note: allophanic is not used as the structural and consistence requirements are not met, although Al(p)/Al(o), pH (H₂O) and the only moderate leaching suggest that allophane is probably the stabile compound. The practice of puddling may have obliterated this. The combination umbri- and brunic indicates that this topsoil has a BS (NH₄OAc) between 35 and 50 %; reduced, redoxic or stagnic is not used as anthraquic implies periodical water saturation.

ANDOSOLS

Fulvi-silic Andosol with a neutral, loamy, thixotropic and allophanic topsoil

Loc.: Nilque, Chile

Thickness: 30 cm

Ref.: Beinroth et al. (1985), p. 143/7

0-17 cm	Ah1	Black (10YR 2/1, broken and rubbed) loam; strong medium coarse granular; friable moist, slightly sticky and slightly plastic wet; weakly smeary.
17-48 cm	Ah2	Black (10YR 2/1) and very dark grayish brown (10YR3/2) silt loam; weak coarse and very coarse subangular blocky; friable moist, slightly sticky and slightly plastic; weakly smeary.

cm	VCS	CS	Particle size distribution					Silt	Clay	OC %	N %	C/N
			MS	FS	VFS							
0-17	1	6	15	13	12	49	4	9.2	0.71	13		
17-48	1	7	20	10	11	48	5	5.4	0.31	17		

cm	H ₂ O	pH CaCl ₂	NaF	Exchangeable bases				CEC (NH ₄ OAc) cmol(+) kg ⁻¹ soil	Extr. ac.	Al	BS %
				Ca	Mg	K	Na				
0-17	5.4	5.0	10.9	8.6	1.4	0.2	-	36.0	43.8	0.3	28
17-48	6.2	5.5	10.9	6.9	0.5	0.1	-	25.0	34.2	0.1	30

cm	BD Mg m ⁻³	P ret.	Acid oxal.			Pyroph. Al	Al(o)+ 1/2Fe(o)	Al(p)/ Al(o)
			Al	Fe	Silt			
0-17	0.85	95	2.4	1.5	1.0	1.1	3.2	0.46
17-48	0.77	96	2.9	2.1	1.6	0.7	4.0	0.24

Note: Neutral is used as the soil reaction requirement for allophanic (pH 5 or more) has no upper limit. In practice alkaline allophanic topsoils are not likely to occur. When this is verified neutral can be dropped and an upper limit for soil reaction can be added to the allophanic requirements.

Hapli-dystric Andosol with a neutral, loamy, opali-modic topsoil

Loc.: Teradani, Iwata-shi, Japan

Thickness: 30 cm

Ref.: Wada (Ed.) (1986), p.228/33

0-3 cm	O	Litter.
3-12 cm	Ah1	Brownish black (7.5YR 2.5/2, moist) clay loam; weak to moderate fine granular and in part weak medium subangular blocky; friable moist, sticky to very sticky and very plastic wet.
12-32 cm	Ah2	Very dark brown (7.5YR 2/3, moist) clay loam; weak fine and fine to medium subangular blocky; friable moist, sticky and very plastic wet.

cm	Particle size distribution			OC %	N %	C/N	BD Mg m ⁻³	Al(p)/ Al(o)
	Sand	Silt	Clay					
3-32	44	23	34	6.52	0.35	19	0.74	1.1

cm	H ₂ O	pH KCl	NaF	Exchangeable bases				Exch. Al	CEC (NH ₄ OAc)	BS %
				Ca	Mg	K	Na			
3-32	5.0	4.3	10.2	0.8	0.2	0.2	0.1	4.5	20.9	6

Note: Opalic and modic are used in combination as there are no organic matter properties included in opalic. Neutral is used as the pH is 5.0, to indicate the boundary case, because opalic and modic both require a pH (H₂O) of < 5.0.

PODZOLS**Carbi-gleyic Podzol** with a sandy, para-modic topsoil

Loc.: Brantley County, Georgia, USA

Thickness: 8 cm

Ref.: Soil Survey Staff (1975), p. 698/9

0-8 cm Ah Gray (10YR 5/1, moist) sand; white sand and finely divided OM.
 8-41 cm E Light gray (10YR 7/1-7/2, moist) sand; loose.

Cm	VCS	Particle size distribution						OC %	N %	C/N
		CS	MS	FS	VFS	Silt	Clay			
0-8	0.4	21	36	31	5	5	0.5	1.12	0.039	29
8-41	0.6	23	34	32	5	5	0.4	0.03	0.006	5

Cm	pH H ₂ O	Exchangeable bases				CEC (NH ₄ OAc)	Extr. ac.	BS %
		Ca	Mg	K	Na			
0-8	4.8	1.5	0	<0.1	<0.1	3.2	4.3	50
8-41	5.6	0.4	0	<0.1	<0.1	0.4	0.6	100

Note: BS is too high for modic, however, all other characteristics are present (low pH, poor mixture of OM and mineral particles, colour), therefore para-modic is used.

PLINTHOSOLS/FERRALSOLS**Veti-humic Ferralsol** with a clayey, sombric topsoil

Loc.: E of Braganca Paulista, SP, Brazil

Thickness: 30 cm

Ref.: Tour Guide VIII International Soil Classification Workshop (1986), p. 44--51

0-10 cm Ap Black (N2/ , moist) clay; moderate fine and medium granular; friable moist, slightly plastic and nonsticky wet.
 10-43 cm Ah Very dark brown (7.5YR 2.5/1, moist) clay; weak fine and medium granular; very friable and friable moist, slightly plastic and nonsticky wet.

cm	VCS	Particle size distribution						OC %	N %	C/N
		CS	MS	FS	VFS	Silt	Clay			
0-10	3	7	7	9	5	14	56	5.95	0.325	18
10-43	4	7	7	8	4	12	59	4.03	0.216	19

cm	pH H ₂ O 1:1	KCl	Exchangeable bases				CEC (NH ₄ OAc)	Al	BS %	AIS %
			Ca	Mg	K	Na				
0-10	4.7	4.4	1.64	0.36	0.14	?	21.9	3.8	10	64
10-43	4.5	4.1	0.24	0.05	0.02	?	16.0	4.7	2	94

Note: sombric is used despite the humic classification to be more precise on the nature of the topsoil, which according to the classification can be an umbric A or a mollic A horizon with low BS in the B horizon, or a high amount of OM; acid is not used as this is implied by sombric.

Hapli-rhodic Ferralsol with an acid, clayey, humic topsoil

Loc.: Temerloh, Pahang, Malaysia

Thickness: 30 cm

Ref.: Beinroth and Paramanathan (Ed.) (1979), p. 296/9

0-4 cm	Ah	Dark reddish brown (2.5YR 3/4) clay; strong crumb; very friable.
4-33 cm	BA	Dark red (2.5YR 3/6) clay; moderate medium subangular blocky; very friable.

Cm	Particle size distribution				OC %	N %	C/N	pH	
	CS	FS	Silt	Clay				H ₂ O	KCl
0-4	2	13	34	51	3.0	0.37	8	5.2	4.9
4-33	2	4	28	66	1.5	0.09	17	4.6	4.3

Cm	Exchangeable bases				CEC (NH ₄ OAc) cmol(+) kg ⁻¹ soil	Exch. Al	Extr. ac.	BS %	Al sat. %
	Ca	Mg	K	Na					
0-4	7.0	2.4	0.4	0.1	10.9	2.5	13.6	91	21
4-33	1.2	0.7	0.2	0.1	5.7	1.7	12.1	37	45

Note: Apart from the C/N ratio in the surface layer all other requirements are met for humic.

PLANOSOLS**Luvi-alic Planosol** with a loamy, modic topsoil

Loc.: Liberty County, Georgia, USA

Thickness: 25 cm

Ref.: Soil Survey Staff (1975), p. 706/7

0-10 cm	Ah1	Dark gray (N4/ , moist) very fine sandy loam; weak fine crumb; friable moist.
10-18 cm	Ah2	Dark gray (N4/ , moist) fine sandy loam; few fine faint (N7/) and pale yellow (2.5Y 8/4) mottles; weak fine crumb.
18-25 cm	Eg	Grayish brown (2.5Y 5/2, moist) fine sandy loam; common faint medium yellow (2.5Y 7/6) and light gray (2.5Y 7/2) mottles; fine granular; friable to firm moist.
25-38 cm	Btg	Grayish brown (2.5Y 5/2, moist) loam; common medium distinct yellow (10YR 7/6) and strong brown (7.5YR 5/6) mottles; weak subangular blocky; firm moist.

Cm	VCS	Particle size distribution					Silt	Clay	OC %	N %	C/N
		CS	MS	FS	VFS						
0-10	0.3	3	4	24	24	38	7	2.20	0.095	23	
10-18	2	4	4	30	18	36	7	1.17	0.059	20	
18-25	1	10	2	27	16	36	9	0.54	0.060	9	
25-38	1	13	2	20	9	37	18	0.22	nd		

Cm	pH H ₂ O 1:1	Exchangeable bases				CEC (NH ₄ OAc) cmol(+) kg ⁻¹ soil	Extr. ac.	BS %
		Ca	Mg	K	Na			
0-10	4.1	1.8	0.9	0.1	0.1	14.6	11.7	20
10-18	4.4	1.0	0.6	tr	0.1	10.8	9.1	16
18-25	4.5	0.8	0.8	tr	0.1	8.3	6.6	20
25-38		0.7	1.1	0.1	0.1	10.7	8.7	19

Note: Although stagnic is implied by the Planosol classification, it is used here to indicate that the stagnic influence reaches the topsoil; thickness of the topsoil is reduced by the contrasting layer at 25 cm depth.

SOLONETZ

Hapli-gleyic Solonetz with a clayey, termitic, hard-setting and natric topsoil

Loc.: South Nyanza District, Kenya

Thickness: 30 cm

Ref.: Wielemaker and Boxem (Eds) (1982), p. 177

Note: medium termite activity observed.

0-8 cm	Ah	Very dark (grayish) brown (10YR 2.5/2, moist) clay loam; strong fine subangular blocky; hard dry, firm moist, sticky and plastic wet.
8-30 cm	Bt	Very dark brown (10YR 2/2, moist) clay; strong coarse prisms coated with a very thin sprinkling of grey (10YR 6/1, dry) silt loam or loam on prism tops and along cracks; very hard dry, very firm moist, very sticky and very plastic wet; plentiful fine and medium roots.

Cm	Particle size distribution			OC %	N %	C/N	pH H ₂ O
	Sand	Silt	Clay				
0-8	32	30	38	2.1	0.50	4	5.2
8-30	26	32	42	0.9	0.09	10	6.0

Cm	Exchangeable bases				CEC (NH ₄ OAc)	BS %	ESP
	Ca	Mg	K	Na			
	cmol(+) kg ⁻¹ soil						
0-8	19.2	6.8	0.8	0.9	42.0	66	2
8-30	10.8	5.1	0.5	6.1	34.4	65	18

Note: Despite being a solonetz, natric is still mentioned as that property reaches into the topsoil.

CHERNOZEMS

Calci-luvic Chernozem with a loamy, melanic topsoil

Loc.: Williams County, North Dakota, USA

Thickness: 28 cm

Ref.: Soil Survey Staff (1975), p. 520/1

0-4 cm	Ah1	Very dark brown (10YR 2/1.5, moist) loam; moderate fine crumb; soft dry, very friable moist.
4-8 cm	Ah2	Very dark brown (10YR 2/1.5, moist) loam; weak medium prismatic, parting to weak fine granular; slightly hard dry, very friable moist.
8-20 cm	Bt1	Very dark brown (10YR 2/2, moist), crushing to very dark grayish brown (10YR 3/2.5) clay loam; moderate medium prismatic parting to strong fine and medium angular and subangular blocky; hard dry, friable moist.
20-28 cm	Bt2	Dark grayish brown (1Y 4/2, moist) clay loam; moderate medium prismatic, parting to moderate medium angular and subangular blocky; hard dry, friable moist.

28-58 cm Bck Light olive brown (2.5Y 5/3, moist), mottled with dark grayish brown (2.5Y 4/2) and light brownish gray (2.5Y 6/2); weak coarse prismatic parting to weak medium blocky; hard dry, friable moist.

cm	VCS	CS	Particle size distribution					Silt	Clay	OC %	N %	C/N
			MS	FS	VFS							
0-4	4	4	5	12	11	44	22	4.68	0.335	14		
4-8	2	4	5	13	12	39	24	2.60	0.227	11		
8-20	2	5	6	14	12	32	29	1.26	0.116	11		
20-28	4	5	6	14	11	33	28	1.20	0.115	10		
28-58	3	4	5	11	11	35	32	0.77	nd			

cm	pH H ₂ O	Exchangeable bases				CEC (NH ₄ OAc)	BS %	CaCO ₃ %
		Ca	Mg	K	Na			
0-4	6.9	18.7	5.4	1.3	0.1	27.9	91	-
4-8	6.5	12.0	4.1	0.9	0.1	20.8	82	-
8-20	6.7	14.5	5.7	0.5	0.1	22.6	92	-
20-28	8.1	nd	nd	0.3	0.1	21.8	nd	3
28-58	8.8	nd	nd	0.2	0.1	16.0	nd	19

Note: Topsoil does not qualify for chernic as averaged OC content is < 3 % (actually 1.9 %); neutral is used as soil reaction in melanic does not have an upper limit.

Glossi-chernic Chernozem with a silty topsoil

Loc.: Smirnovski, Kazakhstan

Thickness: 30 cm

Ref.: FAO-Unesco (1978), p. 104/5

0-18 cm Ah1 Black heavy loam; fine crumb; slightly compacted.
 18-28 cm Ah2 Blackish grey heavy loam; crumb; slightly compacted.
 28-52 cm AB Dark grey heavy loam with brownish grey mottles; crumb; slightly compacted; tonguing boundary.

cm	pH H ₂ O	OC %	N %	C/N	Exchangeable bases				CaCO ₃ %
					Ca	Mg	K	Na	
0-18	6.4	5.2	0.37	14	31.0	1.8	nd	0.1	0.0
18-28	6.5	3.5	0.31	12	25.6	5.4	nd	0.1	0.1
35-45	7.0	1.7	0.17	11	25.5	3.6	nd	0.2	0.9

Note: Neutral is not used as this is implied by chernic in the classification.

KASTANOZEMS

Hapli-calcic Kastanozem with an natric, silty, vermi-melanic topsoil

Loc.: Kokkumber, Tien Shan, Kirgizia

Thickness: 25 cm

Ref.: FAO-Unesco (1978), p. 126/7

0-15 cm Ah Grey heavy loam with chestnut shade; granular; numerous roots and earthworms; slightly compacted.

15-25 cm	AB	Grey heavy loam; granular; numerous roots and earthworms; fungous mycelia; scattered stones.
25-45 cm	Bk	Light grey medium loam; structureless; compact; scattered pebbles; roots; porous.

cm	Particle size distribution						OC %	N %	C/N
	Sand		Silt	coarse	Clay	FCI			
0-15	3	3	37	17	19	18	3.5	0.56	6
15-25	3	5	35	11	17	18	2.7	0.37	7
30-40	4	1	30	11	14	15	2.0	0.29	7

cm	pH H ₂ O	Exchangeable bases		CEC (NH ₄ OAc)	CaCO ₃ %
		Ca	Mg cmol(+) kg ⁻¹ soil		
0-15	8.2	26.8	2.1	31.0	2
15-25	8.4	18.4	2.1	26.3	7
30-40	8.1	10.3	2.2	20.3	21

Note: No chernic because of thickness and OC content.

PHAEZEMS

Hapli-pachic Phaeozem with a loamy, aggeri-brunic topsoil

Loc.: Roccamonfina, Lazio, Italy

Thickness: 30 cm

Ref.: Sevink J. et al. (1984), p. 96/7

Note: topsoil on terraced slope.

0-50 cm	Ap	Very dark grayish brown (2.5Y 3/2, moist) sandy loam; very fine to medium crumb; soft when dry.
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cm	Particle size distribution						OC %	PH		
	VCS	CS	MS	FS	VFS	Silt		Clay	H ₂ O	CaCl ₂
0-50	13	10	13	17	8	29	12	1.2	6.3	6.2

Note: being a deep topsoil on a terraced slope, the use of aggeric is justified; the topsoil meets also the brunic requirements. No soil reaction indication as brunic requires pH 5.0-6.5.

GYPSISOLS/DURISOLS/CALCISOLS/ALBELUVISOLS

Calci-endopetric Durisol with a loamy, arid topsoil

Loc.: Cochise County, Arizona, USA

Thickness: 30 cm

Ref.: Soil Survey Staff (1975), p. 594/5

0-5 cm	Ah1	Brown/dark brown (7.5YR 4/4, moist) loamy coarse sand; moderate medium platy; slightly hard dry, very friable moist; abundant very fine and fine roots.
5-15 cm	Ah2	Dark reddish brown (5YR 3/4, moist) fine sandy loam; massive, parting to weak very fine and fine subangular blocky; slightly hard dry, very friable moist; abundant very fine, fine and medium roots.

15-23 cm	AB	Dark reddish brown (5YR 3/4, moist) fine sandy loam; massive, parting to moderate very fine and fine subangular blocky; slightly hard dry, friable moist; common very fine and fine roots.
23-30 cm	B	Dark reddish brown (5YR 3/4, moist) loam; massive, parting to moderate fine and medium subangular blocky; slightly hard dry, friable moist; common very fine and fine roots.

cm	VCS	CS	Particle size distribution					Silt	Clay	OC %	N %	C/N
			MS	FS	VFS							
0-5	4	15	14	27	15	19	6	0.35	0.032	11		
5-15	4	12	13	25	13	24	10	0.29	0.030	10		
15-23	5	12	11	20	11	29	13	0.26	0.031	8		
23-30	5	9	9	17	10	33	17	0.26	0.031	8		

cm	pH H ₂ O 1:1	Ca	Exchangeable			CEC (NH ₄ OAc)	Extr. ac.	BS %
			Mg	K	Na			
cmol(+) kg ⁻¹ soil								
0-5	6.3	2.2	1.1	0.8	0.2	4.2	1.8	100
5-15	6.0	2.8	1.6	1.0	0.2	5.7	2.3	98
15-23	6.6	4.0	2.2	0.8	0.2	6.9	1.2	100
23-30	7.1	5.0	2.3	0.9	0.3	8.5		100

Note: topsoil meets the requirements for arid, but lacks properties of crusting. Despite being a Calcisol calcic is not used, indicating that the topsoil does not have > 15 % CaCO₃ equivalent.

ALISOLS

Hyperdystr-profondic Alisol with an acid, loamy, humic topsoil

Loc.: East Kalimantan, Indonesia

Thickness: 30 cm

Ref.: Bremen, H. van, et al. (1990), Annex II, p. 23-24

0-8 cm	Ah	Dark brown to brown (7.5YR 4/4, moist) loam; weak fine subangular blocky; very friable moist, slightly sticky wet; many roots in mat at top.
8-25 cm	E	Yellowish brown (10YR 5/8, moist) loam; moderate medium angular blocky; friable moist, moderately sticky wet; many roots.
25-52 cm	Bt	Brownish yellow (10YR 6/8, moist) clay loam; strong medium to coarse angular blocky; firm moist, moderately sticky wet; many roots.

cm	Particle size distribution			OC %	N %	C/N	pH	
	Sa	Silt	Clay				H ₂ O	KCl
0-8	60	23	17	4.46	0.26	17	3.6	3.4
8-25	49	26	25	1.27	0.08	16	4.0	3.7
25-52	43	26	31	0.45	0.04	11	4.4	3.7

cm	Exchangeable bases				CEC (NH ₄ OAc)	clay	Extr. Al	BS %	Al sat. %
	Ca	Mg	K	Na					
cmol(+) kg ⁻¹ soil									
0-8	0.56	0.37	0.15	0.07	9.49	27.3	8.55	12	91
8-25	0.41	0.16	0.07	0.17	9.24	28.3	8.83	9	94
25-52	0.25	0.12	0.07	0.10	8.07	29.0	7.67	7	93

NITISOLS

Humi-alic Nitisol with a clayey, chemically degraded and para-sombric topsoil

Loc.: Chuka-South, Kenya

Thickness: 30 cm

Ref.: De Meester and Legger (Eds) (1988), p. 246/8

0-20 cm	Ah	Dark reddish brown (5YR 3/3, moist) silty clay; weak fine granular structure; loose, non sticky and nonplastic.
20-45 cm	AB	Dark reddish brown (2.5YR 3/4, moist) clay; moderate medium subangular blocky; friable, slightly sticky and slightly plastic; continuous thin clay skins, shiny ped faces.

cm	Particle size distribution			OC %	PH	
	Sa	Silt	Clay		H ₂ O	KCl
0-20	32	24	44	2.3	4.6	4.4
20-45	6	18	76	1.5	4.2	4.0

cm	Ca	Exchangeable bases			Na	CEC (NH ₄ OAc)	BS %
		Mg	K	cmol(+) kg ⁻¹ soil			
0-20	1.7	0.8	0.3	<0.1	20.5	14	
20-45	1.4	0.6	0.1	<0.1	23.2	9	

Note: Chemically degraded is interfered from the low base status, and because maize yields in the area are given between 300 and 1600 kg ha⁻¹, which is low and 70 % or more below the normal yields on these soils.

ACRISOLS

Hyperdystric Profondic Acrisol with a loamy, hard-setting, termiti-arescic topsoil

Loc.: Kasama, Northern Province, Zambia

Thickness: 20 cm

Ref.: Woode (Ed.) (1985), p. 348/55

0-10 cm	Ah	Dark yellowish brown (10YR 3/4, moist) sandy loam; weak fine and medium subangular blocky; slightly hard, slightly sticky and non-plastic; common termite chambers 4 to 5 cm in diameter connected by channels 1 cm in diameter.
10-20 cm	AB	Strong brown (7.5YR 4/6, moist) sandy clay; moderate fine and medium subangular blocky; hard, very sticky and plastic; common termite chambers as in Ah.
20-43 cm	Bt	Strong brown (7.5YR 4/6, moist) clay; weak fine and medium subangular blocky; hard, very sticky and plastic; common termite chambers as in Ah.

cm	VCS	CS	Particle size distribution					OC %	N %	C/N
			MS	FS	VFS	Silt	Clay			
0-10	0.4	4	22	35	13	10	17	0.85	0.053	16
10-20	0.3	4	17	28	12	11	29	0.57	0.042	14
20-43	0.4	3	12	20	10	9	45	0.37	0.033	11

cm	PH		Exchangeable bases				CEC (NH ₄ OAc)	Extr. Al	Extr. ac.
	H ₂ O	KCl	Ca	Mg	K	Na			
0-10	5.1	4.1	0.2	0.4	0.2	tr	3.7	0.8	4.1
10-20	5.1	4.0	-	0.3	0.3	tr	4.3	1.1	4.5
20-43	4.9	4.0	-	0.3	0.2	tr	5.1	1.7	5.7

LUVISOLS

Hapli-rhodic Luvisol with a neutral, clayey, severely eroded topsoil

Loc.: Kitui District, Kenya

Thickness: 30 cm

Ref.: Sketchley H.R. et al. (1978), p. 339/43

Note: slope 8%; severe erosion note.

0-14 cm	B	Dark reddish brown (2.5YR 3/4, moist) sandy clay loam; weak medium subangular blocky; hard dry, friable moist, non-sticky wet.
14-35 cm	Bt	Dark red (2.5YR 3/6, moist) clay; moderate medium subangular blocky; hard dry, firm moist, slightly sticky wet.

cm	VCS	CS	Particle size distribution					OC %	pH	
			MS	FS	VFS	Silt	Clay		H ₂ O	KCl
0-14	18	7	5	12	9	13	37	0.97	7.2	6.1
14-35	14	6	4	9	8	15	45	0.56	6.3	5.2

cm	Exchangeable bases				CEC (NH ₄ OAc)	BS %
	Ca	Mg	K	Na		
0-14	11.5	3.3	0.7	0.1	14.8	100
14-35	9.1	3.5	0.3	0.1	14.8	88

Note: topsoil does not meet the requirements for brunic because of the high pH; melanic does not apply because of the colour; this is logical in view of the severely eroded state of the topsoil, the topsoil properties are dominated by the properties of the former subsoil.

LIXISOLS

Ferri-profondic Lixisol with a neutral, gravelly coarse-loamy, melanic topsoil

Loc.: Nakhon Ratchasima Province, Thailand

Thickness: 30 cm

Ref.: Beinroth and Panichapong (Eds) (1979), p.415/9

0-15 cm	Ap	Dark reddish brown (5YR 3/2) very gravelly (ironstone) sandy loam; weak fine and medium subangular blocky; very friable, slightly sticky, slightly plastic.
15-35 cm	AB	Dark reddish brown (5YR 3/3) very gravelly sandy clay loam; weak fine and medium subangular blocky; very friable, slightly sticky, slightly plastic.

cm	VCS		Particle size distribution					OC %	N %	C/N
	CS	MS	FS	VFS	Silt	Clay				
0-15	11	6	7	17	14	33	13	1.90	0.08	23
15-35	10	5	6	19	15	26	19	0.42	0.11	4

cm	PH		Exchangeable bases				CEC (NH ₄ OAc)	Extr. ac.	BS %
	H ₂ O	KCl	Ca	Mg	K	Na			
0-15	6.7	5.8	6.5	2.0	0.38	0.03	12.3	5.5	73
15-35	7.0	6.0	6.6	1.8	0.20	0.03	11.7	3.9	74

Note: neutral is used as in the melanic requirements soil reaction has no upper boundary.

Rhodi-profondic Lixisol with a neutral, fine-loamy, hard-setting and compacted topsoil
 Loc.: Lusaka, Zambia
 Thickness: 30 cm
 Ref.: Woode (Ed.) (1985), p. 452/9

0-24 cm Ap1 Dark reddish brown (5YR 3/4, moist) sandy clay loam; moderate fine and medium subangular blocky; slightly hard.
 24-38 cm Ap2 Dark reddish brown (2.5YR 3/4, moist) sandy clay loam; weak coarse and very coarse platy parting to moderate fine and medium subangular blocky; hard.

cm	VCS		Particle size distribution					OC %	N %	C/N	BD Mgm ⁻³
	CS	MS	FS	VFS	Silt	Clay					
0-24	0.3	1	6	29	24	18	22	0.63	0.048	13	1.76
24-38	0.3	1	5	27	21	17	29	0.55	0.042	13	1.92

cm	PH		Exchangeable bases				CEC (NH ₄ OAc)	Extr. ac.	BS %
	H ₂ O	KCl	Ca	Mg	K	Na cmol(+) kg ⁻¹ soil			
0-24	6.7	6.0	4.0	1.2	0.2	0.1	4.8	1.8	100
24-38	6.8	5.8	3.3	1.1	0.2	tr	4.6	2.3	100

Note: Topsoil does not qualify for brunic as pH (H₂O) is too high; the OC content just reaches 0.61 % averaged over 0 - 30 cm.

UMBRISOLS

Hapli-humic Umbrisol with a steep, clayey, para-sombric topsoil
 Loc.: Muguga, Gikongor prefecture, Rwanda
 Thickness: 30 cm
 Ref.: Beinroth et al. (Eds.) (1983), p. 74/81

0-15 cm Ah1 Dark reddish brown (6YR 3/3, moist) clay; weak fine crumb, very friable.
 15-35 cm Ah2 Dark reddish brown (6YR 3/3, moist) clay; very weak fine crumb; very friable with some massive blocks up to 5 cm.

cm	Particle size distribution							OC %	N %	C/N
	VCS	CS	MS	FS	VFS	Silt	Clay			
0-15	4	12	19	15	4	8	40	3.08	0.167	18
15-35	3	11	17	13	4	9	44	2.42	0.140	17

cm	PH		Exchangeable bases				CEC (NH ₄ OAc) cmol(+) kg ⁻¹ soil	Extr.		BS %	Al sat %
	H ₂ O	KCl	Ca	Mg	K	Na		Al	ac.		
0-15	4.7	3.8	0.3	0.1	0.1	tr	12.1	3.9	19.0	4	89
15-35	4.5	3.8	0.3	tr	0.1	tr	12.2	4.1	20.7	3	91

Note: OC content too low for sombric, hence para-sombric.

ARENOSOLS

Lamelli-aridic Arenosol with a wind-eroded topsoil

Loc.: Dikokwane Pan, Botswana

Thickness: 30 cm

Ref.: SMAS (1990), p. 18/9

Note: wind erosion/deposition has been observed.

0-25 cm	Ap	Strong brown (8YR 4/6, moist) sand; weak fine to coarse subangular and angular blocky; slightly hard.
25-70 cm	B	Strong brown (7.5YR 4/6, moist) sand; very weak fine to coarse angular and subangular blocky; friable.

cm	Particle size distribution							OC %	N %	pH	
	VCS	CS	MS	FS	VFS	Silt	Clay			H ₂ O	CaCl ₂
5-25	0	1	19	55	17	4	5	0.2	0.00	6.9	6.2
30-50	0	1	21	56	16	3	5	0.1	0.00	7.1	6.3

cm	Exchangeable bases				CEC (NH ₄ OAc) cmol(+) kg ⁻¹ soil	BS %	EP %	CaCO ₃ %
	Ca	Mg	K	Na				
5-25	2.0	0.5	0.4	0.0	4.2	69	10	0.0
30-50	1.7	0.5	0.2	0.1	3.2	78	6	

REGOSOLS

Hapli-calcaric Regosol with an natric, clayey, severely eroded calcic topsoil

Loc.: Torremegia, Badajoz Prov., Spain

Thickness: 30 cm

Ref.: ISRIC, monolith nr. E 11

0-4/6 cm	Ap	Yellowish red (5YR 4/6, moist) gravelly clay; weak to moderate fine crumb; hard dry, friable moist, sticky and plastic wet.
4/6 + cm	Ck	Pink (7.5YR 7/4), dull brown (7.5YR 5/3) and brown (5YR 5/2) very heterogeneous, strongly calcareous clay; structureless; friable moist.

Cm	Particle size distribution				OC %	N %	C/N	pH	
	CS	FS	Silt	Clay				H ₂ O	KCl
0-6	7	19	21	53	0.88	0.07	13	7.9	7.1
6-20	1	5	14	80	0.44	0.05	9	8.3	7.3

Cm	Exchangeable bases				CEC (NH ₄ OAc)	BS %	Exch. Ca/CEC	CaCO ₃ %
	Ca	Mg	K	Na				
	cmol(+) kg ⁻¹ soil							
0-6	16.7	1.3	0.88	?	20.0	94	84	37.0
6-20	12.0	1.0	0.35	?	14.5	92	83	56.9

Note: strong-clayey is used as the average clay content of the topsoil is > 60 %. Calcic is used to indicate that the entire topsoil has > 15 % CaCO₃ equivalent, which is not implied in calcaric. Neither brunic or melanic apply.