Table 2 Suggested prediction methods to use for a given set of available input parameters per each examined soil hydraulic property)[a].

Reference number of model indicated in Table 1	Predicted soil hydraulic property	Type of model	Prediction model
(1)	ϑ_S / cm^3cm^{-3}	RT	Rule 1 IF FAO_MOD=coarse,medium,medium fine AND T/S=sub θ_S =0.416 Rule 2 IF FAO_MOD=coarse,medium,medium fine AND T/S=top θ_S =0.467 Rule 3 IF FAO_MOD=fine θ_S =0.475 Rule 4 IF FAO_MOD=very fine θ_S =0.564 Rule 5 IF FAO_MOD=organic θ_S =0.847
(2)	ϑ_S / cm^3cm^{-3}	RT	Rule 1 IF FAO_MOD=coarse,medium,medium fine AND OC< 0.11 θ_S =0.365 Rule 2 IF OC>=0.11 AND OC< 0.17 θ_S =0.393 Rule 3 IF OC>=0.17 AND OC< 1.74 AND FAO_MOD=coarse θ_S =0.399 Rule 4 IF FAO_MOD=medium AND OC>=0.90 AND OC< 1.74 AND T/S=sub θ_S =0.389

			Rule 5 IF FAO_MOD=medium AND OC>=0.90 AND OC< 1.74 AND T/S=top θ_S =0.435 Rule 6 IF OC>=0.17 AND OC< 0.90 AND FAO_MOD=medium θ_S =0.427 Rule 7 IF OC>=0.17 AND OC< 0.32 AND FAO_MOD=medium fine θ_S =0.412 Rule 8 IF FAO_MOD=medium fine AND OC>=0.32 AND OC< 1.74 θ_S =0.453 Rule 9 IF FAO_MOD=fine,very fine AND OC< 0.63 θ_S =0.434 Rule 10 IF OC>=0.63 AND OC< 1.74 AND FAO_MOD=fine θ_S =0.482 Rule 11 IF OC>=0.63 AND OC< 1.74 AND FAO_MOD=very fine θ_S =0.557 Rule 12 IF OC>=1.74 AND OC< 2.21 AND FAO_MOD=coarse,fine,medium θ_S =0.461 Rule 13 IF OC>=3.79 AND OC<4.64 AND T/S=top AND FAO_MOD=fine θ_S =0.377 Rule 14 IF OC< 3.79 AND OC>=1.74 AND T/S=top AND FAO_MOD=fine θ_S =0.471 Rule 15 IF OC>= 2.21 AND OC<4.64 AND T/S=top AND FAO_MOD=coarse,medium θ_S =0.488

			Rule 16 IF OC>= 2.21 AND OC<4.64 AND T/S=sub AND FAO_MOD=coarse,medium θ_S =0.477 Rule 17 IF OC>= 2.21 AND OC<4.64 AND T/S=sub AND FAO_MOD=fine θ_S =0.570 Rule 18 IF FAO_MOD=medium fine AND OC< 3.11 AND OC>=1.74 θ_S =0.502 Rule 19 IF FAO_MOD=medium fine AND OC>=3.11 AND OC<4.64 θ_S =0.596 Rule 20 IF OC>=1.74 AND OC<4.64 AND FAO_MOD=very fine θ_S =0.628 Rule 21 IF OC>=4.64 AND OC< 7.85 AND FAO_MOD=coarse,medium θ_S =0.531 Rule 22 IF FAO_MOD=coarse,medium AND OC>=7.85 AND OC<10.89 θ_S =0.594 Rule 23 IF OC>=4.64 AND OC<10.89 AND FAO_MOD=fine,medium fine,very fine θ_S =0.625 Rule 24 IF OC>=10.89 AND OC< 17.33 θ_S =0.676 Rule 25 IF OC>=17.33 AND OC<30.34 θ_S =0.771 Rule 26 IF OC>=30.34 AND OC< 48.63 θ_S =0.851

			Rule 27 IF OC>=48.63 θ_S =0.914
(3)	ϑ_S / cm^3cm^{-3}	RT	Rule 1 IF USDA=S,SCL AND T/S=sub θ_S =0.381 Rule 2 IF USDA=SL AND T/S=sub θ_S =0.407 Rule 3 IF USDA=CL,L,LS,SiL AND T/S=sub θ_S =0.428 Rule 4 IF USDA=CL,L,LS,S,SCL,SiL,SL AND T/S=top θ_S =0.465 Rule 5 IF USDA=Si,SiC,SiCL θ_S =0.470 Rule 6 IF USDA=C,SC θ_S =0.520 Rule 7 IF USDA=O AND T/S=top θ_S =0.767 Rule 8 IF USDA=O AND T/S=sub θ_S =0.865
(4)	ϑ_S / cm^3cm^{-3}	RT	Rule 1 IF OC< 1.74 AND OC>=0.33 AND Sa< 37.37 AND Sa>=5.39 AND CL< 49.25 θ_S =0.451 Rule 2 IF OC< 0.90 AND OC>=0.11 AND Sa>=37.37 AND T/S=sub θ_S =0.399

			Rule 3 IF OC< 0.33 AND Sa< 37.37 θ_S =0.406 Rule 4 IF OC>=2.78 AND OC< 4.64 AND Cl< 52.15 AND Si< 59.03 AND Sa>=4.05 θ_S =0.490 Rule 5 IF OC>=1.74 AND OC< 2.78 AND Cl< 52.15 AND Si< 59.03 AND Sa>=4.05 θ_S =0.461 Rule 6 IF OC< 1.74 AND OC>=0.90 AND Sa>=37.37 AND T/S=sub θ_S =0.375 Rule 7 IF OC< 1.74 AND OC>=0.11 AND Sa>=37.37 AND T/S=top θ_S =0.418 Rule 8 IF OC< 0.11 AND Sa>=37.37 AND Cl< 11.55 θ_S =0.374 Rule 9 IF OC>=4.64 AND OC< 7.85 AND Sa>=29.51 θ_S =0.531 Rule 10 IF OC< 1.74 AND OC>=0.63 AND Sa< 37.37 AND Cl>=49.25 θ_S =0.532 Rule 11 IF OC< 0.11 AND Sa>=37.37 AND Cl>=11.55 θ_S =0.328 Rule 12 IF OC>=1.74 AND OC< 4.64 AND Cl< 52.15 AND Si>=59.03 θ_S =0.522 Rule 13 IF OC< 1.74 AND OC>=0.33 AND Sa< 5.39 AND Cl< 49.25 THS=0.499

			Rule 14 IF OC< 0.63 AND OC>=0.33 AND Sa< 37.37 AND Cl>=49.25 θ_S =0.463 Rule 15 IF OC>=1.74 AND OC< 4.64 AND Cl>=52.15 THS=0.593 Rule 16 IF OC>=4.64 AND OC>=7.85 AND Sa>=29.51 θ_S =0.595 Rule 17 IF OC>=3.21 AND OC< 4.64 AND Cl< 52.15 AND Si< 59.03 AND Sa< 4.05 θ_S =0.382 Rule 18 IF OC>=4.64 AND Sa< 29.51 AND T/S=sub θ_S =0.695 Rule 19 IF OC>=4.64 AND Sa< 29.51 AND T/S=top θ_S =0.587 Rule 20 IF OC>=1.74 AND OC< 3.21 AND Cl< 52.15 AND Si< 59.03 AND Sa< 4.05 θ_S =0.525
(5)	ϑ_S / cm^3cm^{-3}	LRt	θ_S = 0.6819 – 0.06480 * (1/(OC+1)) – 0.1190 * (1/(OC+1)) * BD^2 - 0.02683 * BD^2 + 0.001489 * T/S + 0.0008031 * T/S * BD^2 + 0.02321 * Cl + 0.01908 * Cl * T/S – 0.001109 * Si – 0.00002315 * Si * Cl – 0.0001997 * Si * BD^2 – 0.0001068 * Cl * BD^2
(6)	ϑ_S / cm^3cm^{-3}	LRt	θ_S = 0.5653 – 0.07918 * BD^2 + 0.001671 * pH^2 + 0.0005438 * Cl + 0.001065 * Cl * pH^2 + 0.06836 * Si – 0.00001381 * Si * Cl – 0.00001270 * BD^2 * pH^2 – 0.0004784 * Si * BD^2 – 0.0002836 * Cl * BD^2 + 0.0004158 *T/S – 0.01686 * T/S * BD^2 – 0.0003541 * Si * T/S -0.0003152 * T/S * pH^2
(7)	ϑ_{FC} / cm^3cm^{-3}	RT	Rule 1 IF FAO_MOD=coarse AND T/S=sub θ_{FC} =0.157 Rule 2 IF FAO_MOD=coarse AND T/S=top θ_{FC} =0.199 Rule 3 F FAO_MOD=medium AND T/S=sub θ_{FC} =0.280

			Rule 4 IF FAO_MOD=medium AND T/S=top θ_{FC} =0.308 Rule 5 IF FAO_MOD=medium fine θ_{FC} =0.326 Rule 6 IF FAO_MOD=fine, very fine θ_{FC} =0.362 Rule 7 IF FAO_MOD=organic θ_{FC} =0.575
(8)	ϑ_{FC} / cm^3cm^{-3}	RT	Rule 1 IF USDA=S θ_{FC} =0.094 Rule 2 IF USDA=LS θ_{FC} =0.165 Rule 3 IF USDA=Si,SL θ_{FC} =0.236 Rule 4 IF USDA=SC,SCL AND T/S=sub θ_{FC} =0.255 Rule 5 IF USDA=SC,SCL AND T/S=top θ_{FC} =0.309 Rule 6 IF USDA=L,SiL θ_{FC} =0.312 Rule 7 IF USDA=CL,SiCL AND T/S=sub θ_{FC} =0.321

			Rule 8 IF USDA=CL,SiCL AND T/S=top θ_{FC} =0.355 Rule 9 IF USDA=C,SiC θ_{FC} =0.372 Rule 10 IF USDA=O AND T/S=top θ_{FC} =0.503 Rule 11 IF USDA=O AND T/S=sub θ_{FC} =0.596
(9)	ϑ_{FC} / cm^3cm^{-3}	LRt	θ_{FC} = 0.2449 – 0.1887 * (1/(OC+1)) + 0.004527 * Cl + 0.001535 * Si + 0.001442 * Si * (1/(OC+1)) – 0.00005110 * Si * Cl + 0.0008676 * Cl * (1/(OC+1))
(10)	ϑ_{WP} / cm^3cm^{-3}	RT	Rule 1 IF FAO_MOD=coarse θ_{WP} =0.069 Rule 2 IF FAO_MOD=medium θ_{WP} =0.140 Rule 3 IF FAO_MOD=medium fine θ_{WP} =0.163 Rule 4 IF FAO_MOD=fine, organic AND T/S=top θ_{WP} =0.233* Rule 5 IF FAO_MOD=fine, organic AND T/S=sub θ_{WP} =0.268 Rule 6 IF FAO_MOD=very fine θ_{WP} =0.325
(11)	ϑ_{WP}	RT	Rule 1

	/ $cm^3 cm^{-3}$		IF USDA=LS,S,Si θ_{WP} =0.050 Rule 2 IF USDA=SL θ_{WP} =0.100 Rule 3 IF USDA=L,SiL θ_{WP} =0.136 Rule 4 IF USDA=SCL θ_{WP} =0.164 Rule 5 IF USDA=CL,SC,SiCL θ_{WP} =0.211 Rule 6 IF USDA=C,O,SiC AND T/S=top θ_{WP} =0.251 Rule 7 IF USDA=C,O,SiC AND T/S=sub θ_{WP} =0.292
(12)	ϑ_{WP} / $cm^3 cm^{-3}$	LRt	θ_{WP} = 0.09878 + 0.002127* Cl – 0.0008366 * Si – 0.07670 * Si * Cl + 0.00003853 *(1/(OC+1)) + 0.002330 * Cl * (1/(OC+1)) + 0.0009498 * Si * (1/(OC+1))
(13)	$\log_{10}(K_S)$ / $\log_{10}$(cm day^{-1})	RT	Rule 1 IF T/S=sub AND FAO_MOD=coarse,medium,medium fine,organic $\log_{10}(K_S)$=0.77 Rule 2 IF T/S=sub AND FAO_MOD=fine,very fine $\log_{10}(K_S)$=0.01 Rule 3 IF T/S=top AND FAO_MOD=coarse,fine,medium fine,organic,very fine $\log_{10}(K_S)$=1.14 Rule 4 IF T/S=top AND FAO_MOD=medium $\log_{10}(K_S)$=2.23

(14)	$\log_{10}(K_S)$ / $\log_{10}$(cm day^{-1})	RT	Rule 1 IF OC< 0.96 AND OC>=0.41 AND FAO_MOD=coarse,medium,medium fine $\log_{10}(K_S)$=1.54 Rule 2 IF OC< 0.40 AND OC>=0.07 AND FAO_MOD=medium,medium fine $\log_{10}(K_S)$=1.30 Rule 3 IF OC>=1.52 AND OC< 1.54 AND T/S=sub $\log_{10}(K_S)$=-0.75 Rule 4 IF OC< 0.40 AND OC>=0.07 AND FAO_MOD=coarse $\log_{10}(K_S)$=1.83 Rule 5 IF OC>=0.97 AND OC< 1.52 AND T/S=sub $\log_{10}(K_S)$=1.13 Rule 6 IF OC>=2.04 AND OC< 2.12 AND T/S=sub $\log_{10}(K_S)$=-0.58 Rule 7 IF OC>=2.65 AND OC< 3.86 AND T/S=sub $\log_{10}(K_S)$=-0.45 Rule 8 IF OC>=0.96 AND OC< 0.97 AND T/S=sub AND FAO_MOD=fine,medium,medium fine $\log_{10}(K_S)$=-1.16 Rule 9 IF OC< 0.96 AND OC>=0.41 AND FAO_MOD=fine,very fine $\log_{10}(K_S)$=0.79 Rule 10 IF OC>=0.96 AND OC< 1.52 AND T/S=top $\log_{10}(K_S)$=1.80 Rule 11 IF OC>=0.40 AND OC< 0.41 AND FAO_MOD=coarse $\log_{10}(K_S)$=-0.42

			Rule 12 IF OC>=3.86 AND T/S=sub $\log_{10}(K_S)=0.37$ Rule 13 IF OC>=2.10 AND T/S=top AND FAO_MOD=coarse,medium $\log_{10}(K_S)=1.19$ Rule 14 IF OC< 0.07 $\log_{10}(K_S)=0.55$ Rule 15 IF OC< 0.41 AND OC>=0.40 AND FAO_MOD=fine,medium,medium fine,very fine $\log_{10}(K_S)=-1.56$ Rule 16 IF OC>=2.4 AND FAO_MOD=fine,medium fine,organic,very fine $\log_{10}(K_S)=-0.38$ Rule 17 IF OC>=0.96 AND OC< 0.97 AND T/S=sub AND FAO_MOD=coarse,very fine $\log_{10}(K_S)=-0.44$ Rule 18 IF OC>=1.54 AND OC< 2.04 AND T/S=sub $\log_{10}(K_S)=1.33$ Rule 19 IF OC< 0.40 AND OC>=0.07 AND FAO_MOD=fine,very fine $\log_{10}(K_S)=0.66$ Rule 20 IF OC< 2.09 AND OC>=1.54 AND T/S=top $\log_{10}(K_S)=1.74$ Rule 21 IF OC>=2.12 AND OC< 2.65 AND T/S=sub $\log_{10}(K_S)=1.29$ Rule 22 IF OC>=2.09 AND OC< 2.10 AND T/S=top $\log_{10}(K_S)=-0.87$

			Rule 23 IF OC>=1.52 AND OC< 1.54 AND T/S=top $\log_{10}(K_S)$=-0.49 Rule 24 IF OC>=2.10 AND OC< 2.40 AND T/S=top AND FAO_MOD=fine,medium fine,organic,very fine $\log_{10}(K_S)$=1.67
(15)	$\log_{10}(K_S)$ / $\log_{10}$(cm day^{-1})	RT	Rule 1 IF USDA=CL,L,LS,S,SiL,SL AND T/S=sub $\log_{10}(K_S)$=0.82 Rule 2 IF USDA=C,O,SC,SCL,Si,SiC,SiCL $\log_{10}(K_S)$=0.12 Rule 3 IF USDA=LS,S,SiL,SL AND T/S=top $\log_{10}(K_S)$=1.47 Rule 4 IF USDA=CL,L AND T/S=top $\log_{10}(K_S)$=2.69
(16)	$\log_{10}(K_S)$ / $\log_{10}$(cm day^{-1})	RT	Rule 1 IF OC>=2.04 AND T/S=sub $\log_{10}(K_S)$=-0.25 Rule 2 IF OC< 0.40 AND OC>=0.07 AND Sa< 69.72 AND Sa>=5.77 $\log_{10}(K_S)$=1.28 Rule 3 IF OC< 0.96 AND OC>=0.41 AND Cl< 37.4 $\log_{10}(K_S)$=1.53 Rule 4 IF OC>=1.52 AND OC< 1.54 AND T/S=sub $\log_{10}(K_S)$=-0.75 Rule 5 IF OC>=0.96 AND OC< 0.97 AND T/S=sub $\log_{10}(K_S)$=-0.95

			Rule 6 IF OC>=0.97 AND OC< 1.52 AND T/S=sub $\log_{10}(K_s)$=1.13 Rule 10 IF OC< 0.40 AND OC>=0.07 AND Sa>=69.72 $\log_{10}(K_s)$=1.96 Rule 11 IF OC>=0.40 AND OC< 0.41 AND Si< 32.11 $\log_{10}(K_s)$=-0.40 Rule 12 IF OC< 0.96 AND OC>=0.41 AND Cl>=37.4 $\log_{10}(K_s)$=0.67 Rule 13 IF OC>=0.96 AND OC< 1.52 AND T/S=top AND Si>=10.85 $\log_{10}(K_s)$=1.82 Rule 14 IF OC>=2.42 AND T/S=top AND Sa< 38.95 $\log_{10}(K_s)$=-0.22 Rule 15 IF OC< 0.07 $\log_{10}(K_s)$=0.55 Rule 16 IF OC< 0.41 AND OC>=0.40 AND Si>=32.11 $\log_{10}(K_s)$=-1.81 Rule 17 IF OC>=1.54 AND OC< 2.04 AND T/S=sub $\log_{10}(K_s)$=1.33 Rule 18 IF OC>=1.54 AND OC< 2.09 AND T/S=top AND Si>=10.85 $\log_{10}(K_s)$=1.72 Rule 19 IF OC>=2.10 AND T/S=top AND Sa>=38.95 $\log_{10}(K_s)$=1.44

			Rule 20 IF OC>=2.09 AND OC< 2.10 AND T/S=top $\log_{10}(K_S)$=-0.87 Rule 21 IF OC< 0.40 AND OC>=0.07 AND Sa< 5.77 $\log_{10}(K_S)$=-0.11 Rule 22 IF OC>=1.52 AND OC< 1.54 AND T/S=top AND Si>=10.85 $\log_{10}(K_S)$=-0.46 Rule 23 IF OC>=0.96 AND OC< 2.09 AND T/S=top AND Si< 10.85 $\log_{10}(K_S)$=0.01 Rule 24 IF OC>=2.10 AND OC< 2.42 AND T/S=top AND Sa< 38.95 $\log_{10}(K_S)$=1.82
(17)	$\log_{10}(K_S)$ / $\log_{10}$(cm day^{-1})	LR	$\log_{10}K_S$ = 0.4022 + 0.2612 * pH + 0.4456 * T/S - 0.02329 * Cl - 0.01265 * Si - 0.01038 * CEC
(18)	MRC and HCC (ϑ_r, ϑ_s, α, n, K_0, L parameters of MVG model)	MS	(see table below)
(19)	MRC and HCC (ϑ_r, ϑ_s, α, n, K_0, L	MS	(see table below)

(18)

	Modified FAO texture classes	MVG parameters ϑ_r (cm^3 cm^{-3})	ϑ_s (cm^3 cm^{-3})	α (cm^{-1})	n (-)	m (-)	K_0 (cm day^{-1})	L (-)
Top-soils	coarse	0.045	0.438	0.0478	1.3447	0.2563	17.30	-2.5587
	medium	0.000	0.459	0.0309	1.1920	0.1611	12.49	-3.8570
	medium fine	0.000	0.432	0.0094	1.2119	0.1749	1.68	-4.4460
	fine	0.000	0.478	0.0403	1.1176	0.1053	40.19	-4.7040
	very fine	0.000	0.522	0.0112	1.1433	0.1253	2.69	-5.0000
	organic	0.111	0.697	0.0069	1.4688	0.3192	1.42	0.3284
Sub-soils	coarse	0.057	0.404	0.0426	1.5349	0.3485	9.68	-1.8191
	medium	0.000	0.428	0.0347	1.1725	0.1471	11.78	-4.9869
	medium fine	0.000	0.418	0.0066	1.2173	0.1785	1.87	-3.3761
	fine	0.000	0.430	0.0011	1.2290	0.1863	0.07	-1.8486
	very fine	0.000	0.511	0.0002	1.4048	0.2882	0.02	5.0000
	organic	0.000	0.835	0.0113	1.2256	0.1841	10.81	2.7337

(19)

USDA texture classes	MVG parameters ϑ_r	ϑ_s	α	n	m	K_0	L

	parameters of MVG model)		

		(cm^3 cm^{-3})	(cm^3 cm^{-3})	(cm^{-1})	(-)	(-)	(cm day^{-1})	(-)
Top-soils	sand	0.061	0.411	0.0258	1.8005	0.4446	8.33	-0.7306
	loamy sand	0.052	0.475	0.0341	1.4846	0.3264	8.95	-1.8749
	sandy loam	0.000	0.441	0.0750	1.1904	0.1599	44.88	-4.3523
	loam	0.000	0.491	0.0347	1.1931	0.1618	14.17	-4.3000
	silt loam	0.000	0.424	0.0074	1.2545	0.2029	1.17	-3.5496
	silt	0.009	0.465	0.0042	1.4853	0.3267	1.38	-2.6418
	sandy clay loam	0.000	0.409	0.0700	1.1335	0.1178	43.63	-5.0000
	clay loam	0.000	0.465	0.1284	1.1160	0.1040	195.15	-5.0000
	silty clay loam	0.000	0.463	0.0107	1.1892	0.1591	1.38	-2.6418
	sandy clay	0.192	0.523	0.0351	1.4455	0.3082	43.80	-1.6202
	silty clay	0.000	0.455	0.0309	1.1110	0.0999	0.01	5.0000
	clay	0.000	0.499	0.0234	1.1200	0.1072	17.07	-5.0000
	organic	0.111	0.697	0.0069	1.4688	0.3192	1.42	0.3284
Sub-soils	sand	0.034	0.368	0.0356	1.7767	0.4372	5.97	-1.4096
	loamy sand	0.037	0.423	0.0419	1.4222	0.2968	14.84	-1.9583
	sandy loam	0.000	0.437	0.0681	1.1966	0.1643	53.50	-3.7279
	loam	0.000	0.432	0.0336	1.1701	0.1454	8.58	-5.0000
	silt loam	0.000	0.422	0.0077	1.2483	0.1989	1.76	-3.3247
	silt	0.009	0.465	0.0042	1.4853	0.3267	0.45	-5.0000
	sandy clay loam	0.000	0.384	0.0717	1.1206	0.1076	37.09	-5.0000
	clay loam	0.000	0.413	0.0227	1.1191	0.1064	12.35	-5.0000
	silty clay loam	0.000	0.408	0.0032	1.1993	0.1662	0.45	-5.0000
	sandy clay	0.000	0.365	0.0016	1.1812	0.1534	43.80	-1.6202
	silty clay	0.000	0.442	0.0003	1.3861	0.2786	0.01	5.0000
	clay	0.000	0.461	0.0004	1.3027	0.2323	0.04	1.1840
	organic	0.000	0.835	0.0113	1.2256	0.1841	10.81	2.7337

(20)	MRC (ϑ_r / cm^3 cm^{-3}, ϑ_s / cm^3 cm^{-3}, $\log_{10}(\alpha)$ / $\log_{10}$(cm^{-1}), $\log_{10}(n\text{-}1)$ / - parameters of VG model)	RT (for ϑ_r) and LRt (for ϑ_s, $\log_{10}(\alpha)$ and $\log_{10}(\alpha)$)	Rule 1 IF Sa >= 2.00 $\theta_r = 0.041$ Rule 2 IF Sa < 2.00 $\theta_r = 0.179$ $\theta_s = 0.5056 - 0.1437 * (1/(OC+1)) + 0.0004152 * Si$ $\log_{10}(\alpha) = -1.3048 – 0.0006123 * Si – 0.009810 * Cl + 0.07611 * Si * Cl – 0.0004508 * (1/(OC+1)) + 0.03472 * Cl * (1/(OC+1)) – 0.01226 * Si * (1/(OC+1))$ $\log_{10}(n-1) = 0.01516 – 0.005775 * (1/(OC+1)) - 0.2488 * \log_{10}(CEC) – 0.01918 * Cl – 0.0005052 * Cl * (1/(OC+1)) – 0.007544 * Cl * \log10(CEC) – 0.02159 * Si + 0.01556 * (1/(OC+1)) * pH^2 + 0.01477 * pH^2 + 0.0001121 * Si * Cl – 0.3320 * (1/(OC+1)) * \log_{10}(CEC)$

(21)	MRC (ϑ_r / cm[3] cm[-3], ϑ_s / cm[3] cm[-3], $\log_{10}(\alpha)$ / $\log_{10}(cm^{-1})$, $\log_{10}(n-1)$ / - parameters of VG model)	RT (for ϑ_r) and LR (for ϑ_s, $\log_{10}(\alpha)$ and $\log_{10}(\alpha)$)	Rule 1 IF Sa >= 2.00 $\theta_r = 0.041$ Rule 2 IF Sa < 2.00 $\theta_r = 0.179$ $\theta_s = 0.8308 - 0.2822 * BD + 0.0002728 * Cl + 0.0001869 * Si$ $\log_{10}(\alpha) = -0.4335 - 0.4173 * BD - 0.04762 * OC + 0.2181 * T/S - 0.01581 * Cl - 0.01207 * Si$ $\log_{10}(n-1) = 0.2224 - 0.3019 * BD -0.05558 * T/S - 0.005306 * Cl - 0.003084 * Si - 0.01072 * OC$
(22)	MRC (ϑ_r (cm[3] cm[-3]), ϑ_s (cm[3] cm[-3]), $\log_{10}(\alpha)$ ($\log_{10}(cm^{-1})$) , $\log_{10}(n-1)$ (-) parameters of VG model)	RT (for ϑ_r) and LRt2 (for ϑ_s, $\log_{10}(\alpha)$ and $\log_{10}(\alpha)$)	Rule 1 IF Sa >= 2.00 $\theta_r = 0.041$ Rule 2 IF Sa < 2.00 $\theta_r = 0.179$ $\theta_s = 0.6305 – 0.1026 * BD^2 + 0.0002904 * pH^2 + 0.0003335 * Cl$ $\log_{10}(\alpha) = -1.1652 + 0.4051 * (1/(OC+1)) – 0.1606 * BD^2 – 0.008372 * Cl – 0.01300* Si + 0.002166 * pH^2 + 0.08233 * T/S$ $\log_{10}(n-1) = -0.2593 + 0.2568 * (1/(OC+1)) – 0.1059 * BD^2 – 0.009004 * Cl – 0.001223 * Si$

[a]Abbreviations used in table: FAO_MOD: modified FAO texture classes (5 class for mineral soils and an organic class); USDA: USDA-SCS texture classes and an organic class (S: sand, LS: loamy sand, SL: sandy loam, L: loam, SiL: silt loam, Si: silt, SCL: sandy clay loam, CL: clay loam, SiCL: silty clay loam, SC: sandy clay, SiC: silty clay, C: clay, O: organic soils); Sa: sand content (50-2000 µm) (%); Si: silt content (2-50 µm) (%); Cl: clay content (0-2 µm) (%); T/S: top-soil (top) and sub-soil (sub) distinction; OC: organic carbon content (%); BD: bulk density (g cm^{-3}); pH: pH in water; CEC: cation exchange capacity (meq $100g^{-1}$); θ_S: saturated water content (cm^3 cm^{-3}); θ_{FC}: water content at field capacity (cm^3 cm^{-3}); θ_{WP}: water content at wilting point (cm^3 cm^{-3}); K_S: saturated hydraulic conductivity $\log_{10}$(cm day^{-1})]; MRC: moisture retention curve; HCC: hydraulic conductivity curve; VG: van Genuchten model; MVG: Mualem-van Genuchten model; MS: mean statistics of developer determined groups; RT: univariate regression tree; LR, LRt, LRt2: linear regression with or without transformation and interactions, further details of the LR models are provided in ‘Basic principles for fitting the linear regression (LR) model’ section.