

Table S1. Individual values of soil properties for the whole batch of soil profiles, including total available P (TAP), critical available P (CAP), and nutrient availability indexes for P (Olsen P and anion-exchange-resin extractable P –AER-P–), K, Ca, and Mg.

Soil profile	North latitude	West latitude	Tentative Classificat ion ^a	TAP	CAP	Olsen P	AER-P	Organic P	Inorganic P	Total P	Clay	SOC	f _{HH}	CCE	pH	CEC	Ca	Na	Mg	K	Fe _{CBD}	Fe _{CA}	PBC	Xm	A	b	Phosphatase
				mg kg ⁻¹				g kg ⁻¹				g kg ⁻¹				cmol _c kg ⁻¹				– g kg ⁻¹ –							
ID1	37° 24′03″ N	05° 35′15″ W	Xerert	26.2	15.6	9.1	2.5	0.27	0.6	0.9	492	7.5	7.80	75	7.9	37.9	32.6	0.1	4.1	1.1	10.1	1.3	56.1	266.3	130. 2	2.2	159.0
ID2	37° 24′03″ N	05° 35′15″ W	Xerert	30.5	13.9	42.0	5.4	0.69	2.22	2.9	270	9.4	4.60	409	7.7	15.6	13.4	0.0	0.7	1.4	3.3	0.4	22.6	103.2	80.0	3.3	136.7
ID3	42° 39′27″ N	2° 52′38″ W	Fluvent	41.9	18.1	23.3	33.5	0.39	0.69	1.1	190	20.0	1.02	168	7.8	16.0	12.6	0.3	2.2	0.9	6.3	0.9	33.7	33.0	60.1	1.7	153.4
ID4	37° 38′ 17″ N	4° 16′19″ W	Xerept	16.7	7.1	21.6	2.8	0.32	0.33	0.7	190	6.7	1.02	723	8.2	13.2	10.9	0.5	1.5	0.3	2.1	0.2	47.2	252.9	118. 6	2.5	166.2
ID5	37° 34′28″ N	4° 13′03″ W	Xerept	24.6	9.5	18.6	6.3	0.29	0.38	0.7	270	15.0	1.03	546	8.1	22.3	18.7	0.4	2.0	1.2	3.9	0.3	30.1	237,7	81,0	2,6	140,0
ID6	37° 35′13″ N	4° 17′29″ W	Xerept	15.1	8.3	18.1	11.5	0.41	0.56	1.0	393	15.0	1.05	390	8.0	37.0	28.6	0.3	5.6	2.5	3.7	0.5	31.1	154.3	73.6	2.4	149.9
ID7	38° 22′55″ N	4° 55′05″ W	Xeralf- Xerept	75.4	45.2	37.6	3.3	0.32	0.26	0.6	48	15.0	1.01	0	7.2	9.1	6.6	0.3	1.6	0.6	2.0	0.8	6.4	-	15.0	1.8	130.2
ID8	37° 10′32″ N	4° 41′31″ W	Xeralf	28.6	28.6	32.8	9.3	0.29	0.39	0.7	412	8.7	1.03	32	8.1	13.6	10.7	0.3	1.8	0.8	13.2	2.4	50.5	453.4	93.0	1.9	139.2
ID9	37° 23′03″ N	6° 16′01″ W	Xerert	26.6	13.3	18.1	3.1	0.38	0.55	0.9	450	11.0	1.05	244	7.9	36.0	28.3	0.4	5.8	1.5	6.4	0.8	34.4	146.2	78.5	2.2	172.4
ID10	37° 20′51″ N	6° 31′24″ W	Xeralf	26.9	14.0	18.1	2.5	0.27	0.42	0.7	175	5.5	1.02	90	7.9	11.9	9.1	0.2	2.1	0.5	2.9	0.7	15.3	455.3	36.0	2.4	134.7
ID11	38° 04′57″ N	4° 31′33″ W	Xerept	81.7	73.6	49.1	3.1	0.26	0.82	1.1	67	7.8	1.01	0	6.8	10.5	7.8	0.2	2.2	0.3	6.5	2.0	0.0	-	0.4	0.4	142.0
ID12	37° 20′26″ N	3° 50′49″ W	Xeralf	13.3	13.0	21.1	3.7	0.31	0.30	0.6	640	12.5	1.07	77	7.9	52.3	47.1	0.4	2.3	2.5	9.0	2.4	65.8	322.2	135. 5	2	157.1
ID13	37° 42′39″ N	4° 48′08″ W	Xerept	8.7	43.3	21.1	1.7	0.31	0.43	0.7	250	10.0	3.27	564	8.0	10.6	9.9	0.0	0.5	0.2	4.1	0.2	29.9	126.0	77.4	2.7	131.1
ID14	37° 42′20″ N	4° 59′38″ W	Xeralf	32.9	20.2	22.7	24.7	0.30	0.23	0.5	157	6.1	1.01	0	6.5	11.4	8.7	0.4	1.6	0.7	5.9	1.9	24.6	870.7	59.3	1.9	104.7
ID15	42° 39′16″ N	2° 48′27″ W	Xerept	34.3	23.1	21.4	2.4	0.36	0.43	0.8	360	14.0	1.02	244	7.9	18.6	14.6	0.2	2.8	1.0	8.3	1.6	42.4	209.4	98.7	2.3	160.9
ID16	36° 63′30″ N	6° 11′06″ W	Xerrol	20.3	9.8	17.3	8.1	0.36	0.64	1.0	400	8.4	1.05	400	8.1	36.3	28.5	1.0	5.1	1.7	3.6	0.8	37.5	188.4	92.2	2.4	139.7
ID17	37° 55′46″ N	4° 38′46″ W	Fluvent	28.3	16.9	20.1	1.1	0.33	0.52	0.8	180	6.5	1.01	280	8.3	10.9	7.9	0.2	2.1	0.7	5.3	0.8	14.9	132.7	38.5	2.6	119.6
ID18	37° 41′39″ N	4° 27′19″ W	Xerept	14.0	7.9	18.6	2.1	0.34	0.45	0.8	242	12.0	1.03	613	8.2	22.0	19.4	0.1	1.6	0.9	2.7	0.3	31.5	120.9	88.2	2.7	117.9
ID19	37° 24′03″ N	05° 35′15″ W	Xerert	17.7	8.7	6.6	1.2	0.18	0.45	0.6	502	10.0	8.60	28	8.0	44.1	38.2	0.3	4.7	0.9	10.1	1.1	56.9	261.6	139. 6	2.3	152.3
ID20	37° 24′03″ N	05° 35′15″ W	Xerert	19.7	6.9	10.3	2.3	0.18	0.69	0.9	250	14.0	6.60	281	7.9	28.9	26.3	0.0	1.1	1.5	4.5	0.6	29.0	130.1	62.8	2.1	160.9
ID21	42° 39′27″ N	2° 52′38″ W	Fluvent	25.9	5.5	8.4	9.0	0.39	0.37	0.8	190	20.0	1.02	168	7.8	16.0	12.6	0.3	2.2	0.9	6.0	0.8	26.0	109.2	41.8	1.7	165.2
ID22	37° 38′ 17″ N	4° 16′19″ W	Xerept	9.3	0.5	8.7	0.8	0.22	0.37	0.6	190	6.7	1.02	723	8.2	13.2	10.9	0.5	1.5	0.3	2.1	0.3	37.2	218.1	96.6	2.6	119.2
ID23	37° 34′28″ N	4° 13′03″ W	Xerept	17.8	7.4	8.2	2.1	0.28	0.27	0.5	270	9.4	1.03	546	8.1	22.3	18.7	0.4	2.0	1.2	4.1	0.3	35.0	249.8	91.3	2.6	144.0
ID24	37° 35′13″ N	4° 17′29″ W	Xerept	11.6	6.9	7.2	1.2	0.40	0.52	0.9	393	15.0	1.05	390	8.0	37.0	28.6	0.3	5.6	2.5	3.5	0.4	33.8	143.0	78.6	2.3	149.5
ID25	38° 22′55″ N	4° 55′05″ W	Xeralf- Xerept	52.8	27.0	14.8	2.0	0.24	0.27	0.5	48	15.0	1.01	0	7.2	9.1	6.6	0.3	1.6	0.6	4.2	0.9	31.1	-	16.1	1.9	72.1
ID26	37° 10′32″ N	4° 41′31″ W	Xeralf	26.1	24.4	7.1	1.5	0.28	0.20	0.5	412	8.7	1.03	32	8.1	13.6	10.7	0.3	1.8	0.8	11.3	2.0	33.4	172.9	78.0	2.3	145.4
ID27	37° 23′03″ N	6° 16′01″ W	Xerert	16.7	5.3	10.2	0.9	0.32	0.52	0.8	450	11.0	1.05	244	7.9	36.0	28.3	0.4	5.8	1.5	6.2	1.0	36.6	165.7	82.8	2.2	167.4
ID28	37° 20′51″ N	6° 31′24″ W	Xeralf	18.8	9.1	7.2	0.8	0.24	0.22	0.5	175	5.5	1.02	90	7.9	11.9	9.1	0.2	2.1	0.5	3.4	0.7	21.9	72.1	48.6	2.1	122.9
ID29	38° 04′57″ N	4° 31′33″ W	Xerept	67.4	54.7	16.5	8.2	0.31	0.31	0.6	67	7.8	1.01	0	6.8	10.5	7.8	0.2	2.2	0.3	6.8	1.6	15.3	140.8	35.0	2.1	145.1
ID30	37° 20′26″ N	3° 50′49″ W	Xeralf	11.9	10.9	5.7	0.8	0.32	0.23	0.5	640	12.5	1.07	77	7.9	52.3	47.1	0.4	2.3	2.5	8.9	2.0	63.7	319.7	135. 5	2	156.2
ID31	37° 42′39″ N	4° 48′08″ W	Xerept	4.3	37.6	10.8	0.5	0.34	0.43	0.8	293	10.3	3.60	491	7.7	11.6	9.8	0.0	1.3	0.5	5.3	0.3	25.6	108.6	68.5	2.5	164.4

ID32	37° 42′20″ N	4° 59′38″ W	Xeralf	35.6	15.0	4.8	8.6	0.25	0.18	0.4	157	7.4	1.02	0	7.7	14.0	11.7	0.2	1.4	0.7	5.8	1.6	27.0	105.8	70.0	2.5	114.0
ID33	42° 39′16″ N	2° 48′27″ W	Xerept	22.6	10.0	13.0	2.1	0.39	0.37	0.8	360	14.0	1.02	244	7.9	18.6	14.6	0.2	2.8	1.0	6.7	1.4	22.8	-	41.7	1.5	166.9
ID34	36° 63′30″ N	6° 11′06″ W	Xerrol	12.8	4.2	5.0	4.9	0.30	0.37	0.7	400	8.4	1.05	400	8.1	36.3	28.5	1.0	5.1	1.7	3.4	0.9	36.3	182.1	76.9	2.1	124.2
ID35	37° 55′46″ N	4° 38′46″ W	Fluvent	19.0	9.1	6.9	2.2	0.48	0.52	1.0	372	10.3	1.04	126	8.0	32.7	25.7	0.3	4.7	2.0	6.7	1.1	15.7	71.3	86.8	2.5	168.6
ID36	37° 41′39″ N	4° 27′19″ W	Xerept	9.3	4.1	6.3	5.0	0.32	0.36	0.7	212	9.1	1.03	657	8.2	20.2	17.9	0.1	1.5	0.7	2.6	0.3	33.7	144.3	45.0	2.5	99.1

^aAccording to Soil Survey Staff (2010)
fHH. hygroscopic humidity factor; CCE. Ca carbonate equivalent; CEC. cation exchange capacity; FeCBD. citrate-bicarbonate-dithionite extractable Fe; FeCA. citrate-ascorbate extractable Fe; PBC. P buffer capacity according to the Freundlich model at 1 mg P L⁻¹; Xm. maximum P adsorption capacity according to the Langmuir model; A and b. parameters in the Freundlich sorption curve (Y = A X^b).