



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Soil-Analytical Exchange

REFERENCE MATERIAL

ISE sample 841



General Information

In this report an overview is given of analytical data for this sample collected in our proficiency testing program. The consensus values are calculated using a robust statistical model. With this NDA model, the mean and standard deviation are calculated using all reported data when at least 4 results are left after removal of reported 'lower than' (<) and 0 (= zero) values. No outliers are removed.

This report is divided into two sections: Consensus Values and Indicative Values. The division is made on the reliability of the data. Consensus Values are based on at least 8 results and a maximum relative uncertainty of 6.25%. Indicative Values are based on a maximum relative uncertainty of 35% and a minimum of 4 and maximum of 7 results, or a relative uncertainty greater than 6.25% when there are at least 8 results.

For each determinand the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median, MAD (Median of Absolute Deviation), the uncertainty of the mean (consensus or indicative) value and the relative uncertainty.

All values, expressed on a weight basis (kg or %), are reported as oven-dried (105°C) material. Moisture is reported in the material as received.

Sample information

WEPAL reference materials are from natural sources only. There is no spiking, mixing or other alterations of the samples. For sample preparation, the ISE samples are dried at 40°C and milled to pass a 0.5 mm sieve.

This ISE sample 841 of Loamy Clay, from France, is prepared for the WEPAL proficiency programs. The sample has been used in 3 periods (or rounds). The results on which the values in this report are based were taken from the periods given in the following table:

Year	Round	Number
2025	1	3
2022	3	1
2019	2	4



Consensus Values ISE 841



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	37.8	1.95	5.2	49	37.9	1.07	0.349	0.922
As	mg/kg	16.1	2.44	15.1	39	16.2	1.60	0.487	3.03
Ba	mg/kg	363	23.5	6.5	50	364	14.0	4.15	1.14
Br	mg/kg	6.65	1.45	21.8	22	6.69	0.700	0.386	5.80
Ca	g/kg	8.63	0.616	7.1	51	8.69	0.387	0.108	1.25
Cd	mg/kg	10.9	0.564	5.2	33	10.9	0.310	0.123	1.12
Co	mg/kg	8.32	1.27	15.3	39	8.39	0.620	0.254	3.06
Cr	mg/kg	76.6	10.9	14.2	53	78.0	7.42	1.87	2.44
Cu	mg/kg	30.7	4.73	15.4	50	30.2	2.67	0.836	2.72
Fe	g/kg	19.9	0.986	5.0	55	19.9	0.517	0.166	0.836
Ga	mg/kg	8.99	2.13	23.7	33	8.90	1.80	0.463	5.16
K	mg/kg	15312	664	4.3	57	15208	442	110	0.718
Mg	mg/kg	3373	227	6.7	47	3382	122	41.3	1.23
Mn	mg/kg	410	39.4	9.6	53	416	23.6	6.77	1.65
Na	mg/kg	5739	580	10.1	43	5675	375	111	1.93
Ni	mg/kg	20.6	2.87	13.9	51	20.6	1.83	0.501	2.43
P	mg/kg	665	40.9	6.2	45	669	21.5	7.62	1.15
Pb	mg/kg	615	40.2	6.5	50	612	24.5	7.10	1.16
Rb	mg/kg	70.5	2.90	4.1	35	70.3	1.67	0.612	0.868
Si	g/kg	362	11.2	3.1	44	362	5.95	2.11	0.583
Sn	mg/kg	4.51	0.734	16.3	26	4.60	0.404	0.180	3.99
Sr	mg/kg	79.9	4.86	6.1	42	79.6	2.55	0.937	1.17
Y	mg/kg	26.6	2.05	7.7	31	26.4	1.20	0.460	1.73
Zn	mg/kg	864	47.2	5.5	55	863	28.8	7.96	0.921
Zr	mg/kg	492	22.7	4.6	30	490	13.1	5.17	1.05
C-elementary	g/kg	22.1	0.899	4.1	107	22.1	0.550	0.109	0.492
Sb	mg/kg	7.12	0.874	12.3	26	7.02	0.535	0.214	3.01
Be	mg/kg	1.28	0.116	9.1	8	1.31	0.055	0.051	4.01
V	mg/kg	57.3	4.92	8.6	49	57.2	2.93	0.878	1.53
Ti	mg/kg	3826	266	6.9	49	3830	167	47.4	1.24
N - elementary	g/kg	1.41	0.126	8.9	165	1.40	0.080	0.012	0.868
Ce	mg/kg	59.2	4.43	7.5	29	59.0	2.24	1.03	1.74
La	mg/kg	27.9	3.08	11.1	27	28.4	1.60	0.742	2.66
Nb	mg/kg	13.2	2.10	16.0	23	13.3	1.30	0.548	4.16
Nd	mg/kg	24.9	4.20	16.9	22	25.6	2.90	1.12	4.49
Th	mg/kg	8.25	1.39	16.8	18	8.38	0.780	0.409	4.96
Hg	µg/kg	314	16.6	5.3	40	316	8.85	3.27	1.04



Consensus Values ISE 841

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	13.5	3.08	22.8	32	13.0	2.09	0.681	5.04
As	mg/kg	14.5	1.28	8.8	45	14.4	0.800	0.239	1.65
Ba	mg/kg	91.9	13.3	14.5	27	89.6	9.43	3.20	3.49
Ca	g/kg	7.20	0.547	7.6	38	7.22	0.394	0.111	1.54
Cd	mg/kg	10.6	0.911	8.6	58	10.4	0.599	0.150	1.41
Co	mg/kg	7.35	0.928	12.6	43	7.26	0.640	0.177	2.41
Cr	mg/kg	33.5	6.07	18.1	59	34.0	3.96	0.987	2.95
Cu	mg/kg	27.1	2.92	10.8	67	26.8	1.87	0.446	1.64
Fe	g/kg	17.2	1.91	11.1	37	16.8	1.25	0.393	2.29
K	mg/kg	2929	854	29.2	42	2916	493	165	5.62
Mg	mg/kg	2549	281	11.0	39	2520	191	56.2	2.20
Mn	mg/kg	359	31.4	8.7	40	356	21.0	6.20	1.72
N	g/kg	1.37	0.151	11.0	86	1.38	0.090	0.020	1.48
Ni	mg/kg	17.0	1.65	9.7	53	16.8	1.00	0.283	1.66
P	mg/kg	611	60.7	9.9	57	606	37.2	10.1	1.65
Pb	mg/kg	603	59.3	9.8	59	604	42.3	9.65	1.60
S	mg/kg	233	30.7	13.1	34	235	14.6	6.57	2.82
Sn	mg/kg	3.02	0.522	17.3	22	2.99	0.280	0.139	4.61
Zn	mg/kg	818	69.8	8.5	68	810	45.5	10.6	1.29
V	mg/kg	34.4	6.39	18.6	28	34.7	3.30	1.51	4.39
Sb	mg/kg	6.04	0.609	10.1	22	5.99	0.387	0.162	2.69
Be	mg/kg	0.697	0.116	16.6	19	0.704	0.081	0.033	4.77
Hg	µg/kg	314	30.9	9.9	33	311	17.4	6.73	2.14

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ag	µg/kg	892	72.1	8.1	10	895	38.5	28.5	3.20
Al	g/kg	12.9	2.22	17.2	56	13.2	1.27	0.372	2.88
As	mg/kg	14.8	1.20	8.1	70	14.8	0.785	0.179	1.21
Ba	mg/kg	93.1	11.0	11.8	27	94.3	5.70	2.64	2.83
Be	mg/kg	0.712	0.058	8.2	21	0.710	0.030	0.016	2.23
Ca	g/kg	7.10	0.445	6.3	54	7.13	0.250	0.076	1.07
Cd	mg/kg	10.8	0.789	7.3	89	10.7	0.478	0.104	0.966
Co	mg/kg	7.44	0.577	7.8	63	7.48	0.320	0.091	1.22
Cr	mg/kg	33.3	3.54	10.6	89	33.3	2.11	0.469	1.41
Cu	mg/kg	28.6	2.08	7.3	92	28.5	1.46	0.271	0.947



Consensus Values ISE 841



Method: Aqua Regia (ISO 11466)									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Fe	g/kg	17.5	1.03	5.9	67	17.5	0.581	0.157	0.897
Hg	µg/kg	317	29.5	9.3	46	319	17.9	5.44	1.72
K	mg/kg	3043	485	15.9	54	3047	290	82.6	2.71
Li	mg/kg	11.0	1.87	17.1	15	10.8	1.31	0.604	5.51
Mg	mg/kg	2606	203	7.8	58	2610	140	33.4	1.28
Mn	mg/kg	359	28.7	8.0	73	361	16.6	4.19	1.17
Mo	mg/kg	0.609	0.081	13.4	33	0.614	0.044	0.018	2.91
Na	mg/kg	97.5	28.2	28.9	44	97.7	19.5	5.32	5.45
Ni	mg/kg	17.0	1.07	6.3	89	17.0	0.680	0.142	0.834
P	mg/kg	605	45.8	7.6	57	602	25.5	7.58	1.25
Pb	mg/kg	618	53.2	8.6	90	614	33.1	7.01	1.13
S	mg/kg	234	19.3	8.3	42	235	11.7	3.72	1.59
Sb	mg/kg	6.33	0.668	10.5	26	6.34	0.435	0.164	2.58
Sn	mg/kg	3.08	0.375	12.2	14	3.05	0.215	0.125	4.07
Sr	mg/kg	24.7	4.68	18.9	18	24.4	2.55	1.38	5.57
Tl	mg/kg	0.341	0.048	14.0	18	0.343	0.033	0.014	4.14
U	mg/kg	0.862	0.082	9.5	16	0.862	0.055	0.026	2.97
V	mg/kg	35.4	3.73	10.5	40	35.3	2.14	0.738	2.08
Zn	mg/kg	845	56.9	6.7	90	844	33.3	7.50	0.888

Method: Extraction with boiling 2M HNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	mg/kg	11.2	0.860	7.7	52	11.3	0.530	0.149	1.33
Co	mg/kg	6.63	0.350	5.3	47	6.64	0.180	0.064	0.963
Cr	mg/kg	16.7	1.73	10.3	54	16.7	1.00	0.294	1.76
Cu	mg/kg	26.9	1.58	5.9	54	27.0	0.914	0.269	1.00
Hg	µg/kg	303	30.4	10.0	40	301	17.3	6.00	1.98
Mo	mg/kg	0.138	0.037	26.5	30	0.142	0.022	0.008	6.06
Ni	mg/kg	13.2	0.795	6.0	54	13.1	0.500	0.135	1.02
Pb	mg/kg	634	38.7	6.1	54	634	23.3	6.59	1.04
Tl	mg/kg	0.218	0.019	8.8	16	0.221	0.011	0.006	2.74
Zn	mg/kg	836	60.4	7.2	54	838	39.8	10.3	1.23

Method: Extraction with 0.1M NaNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	µg/kg	16.1	2.91	18.1	16	16.9	1.75	0.910	5.64



Consensus Values ISE 841



Method: Extraction with 0.01M CaCl₂ 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	µg/kg	195	24.8	12.7	12	192	11.5	8.93	4.59
K	mg/kg	106	5.96	5.6	24	107	3.45	1.52	1.44
Mg	mg/kg	51.6	3.71	7.2	20	51.1	2.45	1.04	2.01
Na	mg/kg	6.98	0.853	12.2	19	7.00	0.470	0.245	3.51
P	mg/kg	2.45	0.478	19.5	24	2.41	0.300	0.122	4.99

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pH - H ₂ O	...	8.08	0.278	3.4	286	8.08	0.200	0.021	0.254
pH - KCl	...	7.54	0.268	3.6	126	7.53	0.170	0.030	0.396
pH - CaCl ₂	...	7.48	0.185	2.5	91	7.47	0.120	0.024	0.325
Fraction < 2 µm	%	16.5	4.62	28.0	81	16.5	2.59	0.641	3.89
EC-SC (ISO 11265)	mS/m	12.6	2.86	22.6	124	12.8	1.80	0.321	2.54
Fraction < 63 µm	%	80.8	5.03	6.2	51	80.9	2.70	0.880	1.09
Fraction > 63 µm	%	18.6	4.01	21.6	47	18.8	2.31	0.731	3.94
Org.matter (L.O.I.)	%	4.31	0.451	10.5	117	4.27	0.250	0.052	1.21
TC=Total C (org.+inorg.)	g/kg	21.9	1.25	5.7	120	21.9	0.790	0.143	0.652
TOC=Total Org. C	g/kg	19.7	2.90	14.7	136	19.7	1.88	0.311	1.58
C - org others (W&B a.o.)	g/kg	12.8	2.20	17.3	146	12.8	1.23	0.228	1.78

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Moisture-content	%	2.12	0.272	12.8	141	2.10	0.190	0.029	1.35
delta 13C	‰ V-PDB	-25.3	0.238	0.9	12	-25.3	0.145	0.086	0.340
delta 15N	‰ Air	6.92	0.274	4.0	11	6.90	0.200	0.103	1.49

Method: Pot. CEC using 1M NH₄-acetate at pH=7

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	14.1	2.54	18.0	99	14.3	1.60	0.320	2.26
K	cmol+/kg	0.618	0.083	13.5	162	0.620	0.050	0.008	1.33
Mg	cmol+/kg	0.718	0.140	19.5	156	0.721	0.089	0.014	1.95
Ca	cmol+/kg	21.2	4.30	20.3	150	21.4	2.45	0.439	2.08

Method: Pot. CEC using 1M or 0.1M BaCl₂-TEA at pH=8.1 (ISO 13536 OR BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	16.2	1.31	8.1	8	16.2	0.850	0.581	3.59



Consensus Values ISE 841

Method: Pot. CEC using 1M NH₄Cl (BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	cmol+/kg	0.646	0.076	11.8	8	0.645	0.045	0.034	5.21
Mg	cmol+/kg	0.779	0.058	7.4	8	0.793	0.042	0.025	3.27
Ca	cmol+/kg	18.8	0.848	4.5	8	19.0	0.485	0.375	2.00

Method: Act. CEC using cobaltihexamine (AFNOR NFX 31 130)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	16.3	1.07	6.5	25	16.3	0.540	0.267	1.64
K	cmol+/kg	0.574	0.060	10.5	20	0.583	0.034	0.017	2.94
Ca	cmol+/kg	16.7	2.33	14.0	20	16.7	1.56	0.650	3.90
Mg	cmol+/kg	0.654	0.078	11.9	20	0.667	0.038	0.022	3.34

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	1.38	0.308	22.3	39	1.38	0.185	0.062	4.47
Ca	mg/kg	4812	494	10.3	62	4799	291	78.4	1.63
Cu	mg/kg	8.12	0.889	10.9	64	8.02	0.540	0.139	1.71
Fe	mg/kg	302	50.8	16.8	67	294	33.9	7.76	2.57
K	mg/kg	260	19.3	7.4	64	259	12.5	3.01	1.16
Mg	mg/kg	135	17.2	12.7	64	135	11.6	2.69	1.99
Mn	mg/kg	104	16.4	15.8	67	105	10.3	2.51	2.42
P	mg/kg	149	17.2	11.6	79	146	10.3	2.42	1.63
Zn	mg/kg	174	24.4	14.0	64	174	15.7	3.81	2.18
Al	mg/kg	416	62.0	14.9	35	422	39.1	13.1	3.15

Method: Extraction with 0.01M CaCl₂ - 0.005M DTPA 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	5.71	0.842	14.7	52	5.62	0.525	0.146	2.56
Mn	mg/kg	16.1	4.97	30.9	53	16.4	3.03	0.852	5.31
Zn	mg/kg	77.8	13.6	17.5	55	79.2	8.21	2.29	2.95

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Olsen (as P)	mg/kg	66.6	11.5	17.3	111	67.0	7.70	1.37	2.05
Al - Ox	mg/kg	636	38.1	6.0	10	639	26.2	15.1	2.37
Fe - Ox	mg/kg	2011	219	10.9	10	2042	128	86.5	4.30
P - Ox	mg/kg	350	6.67	1.9	9	351	3.50	2.78	0.795
P - AL (as P)	mg/kg	222	22.5	10.1	35	223	13.5	4.75	2.14



Consensus Values ISE 841

Method: UK Soil Methods

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P – NaHCO ₃ (1/20)	mg/l	64.6	9.45	14.6	36	64.0	6.60	1.97	3.05
K - NH ₄ NO ₃ (1/5)	mg/l	248	28.2	11.4	44	245	23.5	5.32	2.14
Mg - NH ₄ NO ₃ (1/5)	mg/l	77.1	10.6	13.8	43	77.4	8.57	2.02	2.63
pH - H ₂ O (2/5)	...	8.08	0.260	3.2	40	8.11	0.185	0.051	0.635



Indicative Values ISE 841



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
I	mg/kg	3.85	0.411	10.7	7	3.80	0.390	0.194	5.04
Li	mg/kg	21.2	0.764	3.6	6	21.4	0.400	0.390	1.84
Mo	mg/kg	0.863	0.218	25.3	12	0.900	0.128	0.079	9.11
S	mg/kg	289	106	36.8	46	299	62.5	19.6	6.78
Tl	mg/kg	0.693	0.260	37.5	11	0.747	0.147	0.098	14.1
Ag	mg/kg	0.944	0.503	53.3	8	1.04	0.303	0.222	23.6
Bi	mg/kg	2.23	1.11	49.8	5	3.00	0.400	0.622	27.8
Sc	mg/kg	8.86	1.93	21.7	18	9.00	1.39	0.568	6.41
U	mg/kg	2.28	0.542	23.8	12	2.45	0.356	0.196	8.57
Cs	mg/kg	2.74	1.23	45.0	12	2.95	0.665	0.444	16.2
W	mg/kg	1.95	1.05	53.8	9	1.90	0.620	0.438	22.4
Yb	mg/kg	2.94	0.308	10.5	4	3.02	0.152	0.192	6.54
Sm	mg/kg	4.61	1.77	38.5	5	4.84	0.837	0.992	21.5

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	15.7	9.66	61.7	23	17.0	5.10	2.52	16.1
Li	mg/kg	13.4	3.45	25.7	7	13.7	1.92	1.63	12.1
Mo	mg/kg	0.534	0.148	27.7	18	0.605	0.074	0.044	8.16
Na	mg/kg	99.2	43.8	44.1	32	100	30.7	9.67	9.75
Se	mg/kg	0.581	0.494	85.0	10	0.565	0.199	0.195	33.6
Sr	mg/kg	26.0	3.74	14.4	8	25.8	2.33	1.65	6.35
Tl	mg/kg	0.389	0.107	27.4	7	0.380	0.060	0.050	12.9
Ag	mg/kg	0.867	0.178	20.6	7	0.910	0.124	0.084	9.72
Ti	mg/kg	292	208	71.2	8	334	119	92.1	31.5

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	15.7	4.43	28.2	23	15.4	2.90	1.15	7.35
Rb	mg/kg	27.0	9.00	33.4	4	27.0	5.10	5.63	20.9
Se	mg/kg	0.457	0.183	40.0	21	0.447	0.107	0.050	10.9
Ti	mg/kg	363	93.7	25.8	21	367	46.0	25.6	7.03

Method: Extraction with 0.1M NaNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	µg/kg	103	22.6	22.0	15	104	19.0	7.31	7.09
Pb	µg/kg	22.7	6.12	26.9	6	24.2	4.50	3.12	13.7

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Method: Extraction with 0.1M NaNO ₃									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Zn	µg/kg	105	25.8	24.5	13	109	13.0	8.93	8.48
Method: Extraction with 0.01M CaCl ₂ 1:10									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Co	µg/kg	3.12	0.330	10.6	4	3.20	0.176	0.206	6.61
Cu	µg/kg	97.9	20.0	20.5	13	92.2	17.8	6.94	7.09
Fe	mg/kg	1.78	2.29	128.7	8	1.95	1.27	1.01	56.9
Mn	mg/kg	1.28	0.327	25.6	12	1.31	0.195	0.118	9.23
N - NH ₄ (as N)	mg/kg	3.60	1.61	44.7	22	3.45	0.997	0.429	11.9
N - NO ₃ (as N)	mg/kg	1.69	0.376	22.2	19	1.74	0.121	0.108	6.37
SO ₄	mg/kg	25.6	17.7	69.3	9	25.1	13.4	7.39	28.9
Zn	µg/kg	300	176	58.5	13	343	117	61.0	20.3
Method: Soil characteristics									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
TIC=Tot.Inorg C(as CaCO ₃)	%	0.758	0.648	85.5	80	0.892	0.450	0.091	11.9
Fraction < 16 µm	%	35.9	9.04	25.2	24	34.8	5.52	2.31	6.42
Method: Other determinations									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B - Hot water	mg/kg	0.742	0.355	47.8	33	0.750	0.172	0.077	10.4
Method: Fluoride (Swiss standard procedure)									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F - Total	mg/kg	245	43.9	17.9	10	235	33.5	17.3	7.08
Method: Pot. CEC using 1M NH ₄ -acetate at pH=7									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.061	0.035	57.0	121	0.069	0.029	0.004	6.48
Al	cmol+/kg	0.020	0.006	28.7	8	0.020	0.003	0.003	12.7
Method: Pot. CEC using 1M NH ₄ Cl (BZE)									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.049	0.014	28.4	8	0.053	0.010	0.006	12.5



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Method: Act. CEC using 0.01M BaCl₂ (ISO 11260)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	15.3	2.99	19.5	4	15.5	1.45	1.87	12.2
K	cmol+/kg	0.693	0.124	17.9	5	0.711	0.072	0.069	10.0
Mg	cmol+/kg	0.695	0.033	4.8	5	0.699	0.021	0.019	2.67
Ca	cmol+/kg	17.5	2.94	16.8	5	18.5	1.47	1.64	9.41

Method: Act. CEC using cobaltihexamine (AFNOR NFX 31 130)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.035	0.008	21.8	17	0.036	0.006	0.002	6.62

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	mg/kg	13.6	4.87	35.7	44	14.0	3.06	0.918	6.73
Cd	mg/kg	7.44	0.864	11.6	6	7.29	0.621	0.441	5.93
Cr	mg/kg	0.406	0.058	14.3	4	0.414	0.027	0.036	8.97
Pb	mg/kg	366	25.0	6.8	5	358	11.0	14.0	3.82

Method: Water soluble 1:10 (w/v) (EN-12457-4)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F	mg/kg	7.99	2.21	27.6	5	8.09	1.25	1.23	15.4
N - NO ₃ (as N)	mg/kg	2.02	1.25	62.1	6	2.04	0.771	0.639	31.7

Method: Extraction with 0.01M CaCl₂ - 0.005M DTPA 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Fe	mg/kg	42.5	18.0	42.3	56	43.0	11.3	3.00	7.07

Method: Extraction with 1M KCl 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
N - NH ₄ (as N)	mg/kg	5.90	3.42	58.0	32	6.21	1.97	0.756	12.8
N - NO ₃ (as N)	mg/kg	1.85	0.668	36.1	34	1.91	0.475	0.143	7.73

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Bray (as P)	mg/kg	92.1	59.8	64.8	75	91.2	36.6	8.63	9.36
P - w (as P)	mg/l soil	40.6	19.5	48.1	10	38.2	11.8	7.73	19.0



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Method: Water soluble 1:10 (w/v) (Neth standard VPR C85-06)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
SO4	mg/kg	27.8	9.37	33.7	5	27.6	5.13	5.24	18.8

Method: Extraction with dilute nitric acid (0.43 Mol/l) ISO 17586

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	17.5	0.500	2.9	5	17.6	0.170	0.280	1.59
Fe	g/kg	1.14	0.162	14.3	4	1.15	0.091	0.101	8.93
K	mg/kg	311	28.9	9.3	4	312	13.0	18.1	5.81
Mn	mg/kg	206	14.4	7.0	4	210	7.50	8.98	4.36
P	mg/kg	344	42.4	12.3	4	341	20.3	26.5	7.70
Na	mg/kg	21.8	3.20	14.7	4	21.9	1.90	2.00	9.19