



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Soil-Analytical Exchange

REFERENCE MATERIAL

ISE sample 849



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 849 of Sandy soil, from Netherlands, is prepared for the WEPAL proficiency programs. The sample has been used in 6 periods (or rounds). Only results from the last 5 periods are used. This way, the consensus values reflect the latest 'state of the art' analytical techniques used by the laboratories. The results on which the values in this report are based were taken from the periods given in the following table:

Year	Round	Number
2024	4	3
2024	3	2
2024	2	4
2024	1	1
2023	3	3



Consensus Values ISE 849



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	17.3	0.918	5.3	70	17.3	0.499	0.137	0.794
As	mg/kg	4.72	1.33	28.1	46	4.58	0.681	0.245	5.18
Ba	mg/kg	190	19.5	10.3	61	190	13.0	3.13	1.65
Br	mg/kg	6.94	1.28	18.5	35	7.00	1.00	0.271	3.91
Ca	g/kg	2.17	0.255	11.7	69	2.20	0.170	0.038	1.76
Cd	mg/kg	0.286	0.057	19.9	29	0.288	0.048	0.013	4.61
Cr	mg/kg	32.0	8.01	25.0	63	32.9	5.23	1.26	3.94
Cu	mg/kg	5.67	2.00	35.3	54	6.00	1.02	0.341	6.00
Fe	g/kg	6.11	0.570	9.3	79	6.18	0.320	0.080	1.31
K	mg/kg	7847	616	7.9	90	7855	324	81.2	1.04
Mg	mg/kg	639	141	22.1	61	660	88.0	22.6	3.54
Mn	mg/kg	174	27.5	15.8	73	173	17.7	4.02	2.32
Na	mg/kg	3960	320	8.1	60	3942	202	51.7	1.31
Ni	mg/kg	6.29	2.42	38.4	62	6.40	1.40	0.384	6.10
P	mg/kg	786	73.6	9.4	70	788	42.0	11.0	1.40
Pb	mg/kg	20.6	3.45	16.8	68	20.7	2.03	0.524	2.55
Rb	mg/kg	30.3	1.98	6.5	42	30.0	1.30	0.381	1.26
S	mg/kg	313	70.1	22.4	75	305	40.0	10.1	3.24
Si	g/kg	415	7.60	1.8	67	413	4.80	1.16	0.279
Sr	mg/kg	41.3	6.42	15.5	52	41.9	4.00	1.11	2.69
Y	mg/kg	8.25	1.31	15.9	34	8.21	0.900	0.281	3.41
Zn	mg/kg	23.9	3.14	13.1	72	23.9	2.04	0.463	1.93
Zr	mg/kg	207	25.1	12.1	40	208	18.5	4.96	2.39
C-elementary	g/kg	19.2	1.29	6.7	170	19.1	0.847	0.124	0.643
Tl	mg/kg	0.247	0.034	13.6	13	0.252	0.023	0.012	4.73
V	mg/kg	26.5	4.63	17.4	64	26.7	2.55	0.723	2.73
Ti	mg/kg	918	109	11.9	67	911	66.2	16.6	1.81
N - elementary	g/kg	1.73	0.166	9.6	264	1.72	0.100	0.013	0.740
La	mg/kg	8.60	2.34	27.2	33	8.68	1.68	0.510	5.93
Hg	µg/kg	56.2	5.65	10.1	69	56.0	3.73	0.850	1.51

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	5.17	0.834	16.1	52	5.23	0.596	0.145	2.80
As	mg/kg	3.55	0.515	14.5	74	3.51	0.292	0.075	2.11
Ba	mg/kg	19.6	2.88	14.7	44	19.7	1.76	0.543	2.77
Ca	g/kg	1.36	0.172	12.6	72	1.37	0.101	0.025	1.86



Consensus Values ISE 849



Method: Acid extractable (So-called totals)									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	mg/kg	0.249	0.041	16.5	80	0.250	0.029	0.006	2.30
Co	mg/kg	0.802	0.114	14.2	46	0.800	0.058	0.021	2.62
Cr	mg/kg	18.1	3.11	17.2	94	18.3	1.92	0.401	2.21
Cu	mg/kg	4.87	0.552	11.3	98	4.88	0.338	0.070	1.43
Fe	g/kg	5.07	0.543	10.7	67	5.10	0.335	0.083	1.64
K	mg/kg	383	109	28.5	66	377	80.5	16.8	4.39
Mg	mg/kg	457	64.5	14.1	65	450	50.2	10.0	2.19
Mn	mg/kg	134	17.9	13.4	77	133	11.7	2.55	1.90
Mo	mg/kg	0.589	0.096	16.3	33	0.612	0.047	0.021	3.54
N	g/kg	1.64	0.182	11.1	107	1.64	0.111	0.022	1.34
Na	mg/kg	55.2	17.7	32.0	58	54.7	11.9	2.90	5.26
Ni	mg/kg	4.88	0.616	12.6	83	4.88	0.380	0.084	1.73
P	mg/kg	731	82.4	11.3	85	728	53.2	11.2	1.53
Pb	mg/kg	16.3	1.81	11.1	98	16.3	1.11	0.229	1.40
S	mg/kg	327	41.1	12.6	56	326	22.0	6.87	2.10
Sn	mg/kg	0.898	0.153	17.0	30	0.860	0.130	0.035	3.88
Sr	mg/kg	5.72	0.787	13.8	15	5.62	0.423	0.254	4.44
Zn	mg/kg	20.0	2.50	12.5	100	20.1	1.51	0.312	1.56
V	mg/kg	20.6	2.23	10.9	51	20.6	1.42	0.391	1.90
Be	mg/kg	0.193	0.027	14.2	22	0.193	0.023	0.007	3.79
Hg	µg/kg	53.7	8.28	15.4	49	54.9	5.29	1.48	2.75

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	4.89	0.664	13.6	101	4.93	0.429	0.083	1.69
As	mg/kg	3.58	0.372	10.4	107	3.57	0.268	0.045	1.26
Ba	mg/kg	20.2	2.04	10.1	37	20.3	1.20	0.419	2.08
Be	mg/kg	0.185	0.025	13.5	30	0.187	0.014	0.006	3.09
Ca	g/kg	1.37	0.111	8.1	86	1.37	0.070	0.015	1.09
Cd	mg/kg	0.254	0.033	12.9	127	0.257	0.023	0.004	1.43
Co	mg/kg	0.794	0.140	17.6	84	0.793	0.083	0.019	2.41
Cr	mg/kg	18.3	2.45	13.4	146	18.2	1.52	0.253	1.38
Cu	mg/kg	5.03	0.598	11.9	134	5.10	0.395	0.065	1.28
Fe	g/kg	5.21	0.474	9.1	112	5.18	0.271	0.056	1.07
Hg	µg/kg	57.2	7.37	12.9	61	57.0	3.93	1.18	2.06
K	mg/kg	400	68.5	17.1	94	397	40.5	8.83	2.20
Li	mg/kg	5.65	1.15	20.3	25	5.49	0.800	0.286	5.07



Consensus Values ISE 849



Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mg	mg/kg	455	52.6	11.6	98	455	30.5	6.65	1.46
Mn	mg/kg	132	10.7	8.1	123	133	7.00	1.20	0.911
Mo	mg/kg	0.614	0.072	11.8	61	0.620	0.050	0.012	1.88
Na	mg/kg	56.1	19.4	34.6	66	59.3	11.5	2.99	5.33
Ni	mg/kg	4.95	0.707	14.3	137	4.94	0.385	0.076	1.53
P	mg/kg	742	61.4	8.3	84	747	42.0	8.38	1.13
Pb	mg/kg	16.1	1.89	11.8	145	16.2	1.19	0.197	1.22
S	mg/kg	318	18.7	5.9	58	317	11.6	3.06	0.965
Sb	mg/kg	0.294	0.037	12.5	25	0.298	0.025	0.009	3.12
Se	mg/kg	0.280	0.061	21.8	30	0.293	0.039	0.014	4.97
Sn	mg/kg	0.808	0.096	11.9	21	0.828	0.071	0.026	3.25
Sr	mg/kg	6.51	1.59	24.4	26	6.39	1.13	0.390	5.99
Ti	mg/kg	84.4	18.2	21.6	30	88.7	10.0	4.16	4.93
Tl	mg/kg	0.063	0.008	13.2	22	0.064	0.005	0.002	3.51
U	mg/kg	0.425	0.039	9.1	23	0.425	0.023	0.010	2.38
V	mg/kg	21.2	1.64	7.7	57	21.1	1.00	0.272	1.28
Zn	mg/kg	20.7	2.23	10.8	144	20.8	1.29	0.232	1.12

Method: Extraction with boiling 2M HNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	mg/kg	0.261	0.027	10.4	76	0.264	0.017	0.004	1.49
Co	mg/kg	0.520	0.052	10.0	54	0.524	0.031	0.009	1.71
Cr	mg/kg	10.3	0.726	7.1	84	10.4	0.472	0.099	0.965
Cu	mg/kg	4.75	0.482	10.1	79	4.83	0.300	0.068	1.43
Hg	µg/kg	50.8	7.25	14.3	62	51.0	4.78	1.15	2.27
Mo	mg/kg	0.177	0.034	19.3	50	0.182	0.020	0.006	3.41
Ni	mg/kg	2.27	0.220	9.7	74	2.29	0.137	0.032	1.41
Pb	mg/kg	16.1	1.59	9.9	85	16.2	1.00	0.216	1.34
Tl	mg/kg	0.039	0.005	12.5	14	0.039	0.002	0.002	4.17
Zn	mg/kg	17.4	1.64	9.4	83	17.4	1.08	0.225	1.30

Method: Extraction with 0.1M NaNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	µg/kg	3.24	0.292	9.0	11	3.30	0.128	0.110	3.39
Cu	µg/kg	37.4	7.08	18.9	18	38.6	3.95	2.09	5.58
Zn	µg/kg	132	9.42	7.1	20	131	5.00	2.63	1.99



Consensus Values ISE 849



Method: Extraction with 0.01M CaCl₂ 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Co	µg/kg	13.1	1.91	14.6	9	13.6	1.60	0.795	6.07
K	mg/kg	80.0	4.95	6.2	35	80.2	3.00	1.05	1.31
Mg	mg/kg	96.2	5.78	6.0	28	95.9	3.85	1.37	1.42
Mn	mg/kg	16.7	1.11	6.6	19	17.0	1.00	0.317	1.90
N - NH ₄ (as N)	mg/kg	14.4	1.28	8.9	43	14.8	0.944	0.243	1.69
N - NO ₃ (as N)	mg/kg	65.1	4.69	7.2	42	64.6	2.96	0.905	1.39
Na	mg/kg	25.5	2.18	8.6	30	25.7	1.33	0.497	1.95
Zn	µg/kg	585	63.0	10.8	20	583	41.8	17.6	3.01

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pH - H ₂ O	...	5.86	0.190	3.2	454	5.87	0.120	0.011	0.190
pH - KCl	...	5.42	0.148	2.7	203	5.40	0.100	0.013	0.240
pH - CaCl ₂	...	5.46	0.144	2.6	142	5.48	0.085	0.015	0.276
Fraction < 2 µm	%	4.31	1.96	45.4	142	4.25	1.33	0.205	4.76
EC-SC (ISO 11265)	mS/m	20.3	2.67	13.1	188	20.1	1.44	0.243	1.20
Fraction < 63 µm	%	18.2	3.62	19.9	105	18.5	2.30	0.441	2.42
Fraction > 63 µm	%	81.5	3.14	3.9	96	81.2	2.30	0.400	0.491
Org.matter (L.O.I.)	%	3.84	0.270	7.0	198	3.84	0.168	0.024	0.624
TC=Total C (org.+inorg.)	g/kg	19.1	1.22	6.4	213	19.0	0.723	0.104	0.546
TOC=Total Org. C	g/kg	18.7	1.83	9.8	260	18.6	1.07	0.142	0.761
C - org others (W&B a.o.)	g/kg	18.4	2.56	14.0	212	18.3	1.77	0.220	1.20

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Moisture-content	%	0.996	0.168	16.9	236	1.00	0.100	0.014	1.37
delta 13C	‰ V-PDB	-28.7	0.100	0.3	19	-28.6	0.060	0.029	0.100
delta 15N	‰ Air	368	7.07	1.9	19	368	3.58	2.03	0.551

Method: Fluoride (Swiss standard procedure)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F - Total	mg/kg	82.0	7.13	8.7	15	80.0	4.00	2.30	2.81

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	6.47	1.54	23.7	148	6.54	1.03	0.158	2.44
Na	cmol+/kg	0.126	0.028	22.2	214	0.130	0.020	0.002	1.90



Consensus Values ISE 849



Method: Pot. CEC using 1M NH ₄ -acetate at pH=7									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	cmol+/kg	0.288	0.041	14.4	261	0.290	0.023	0.003	1.11
Mg	cmol+/kg	0.854	0.121	14.1	260	0.862	0.071	0.009	1.09
Ca	cmol+/kg	4.05	0.638	15.8	250	4.06	0.384	0.050	1.25

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	10.7	1.86	17.4	15	10.9	1.30	0.601	5.63

Method: Pot. CEC using 1M NH₄Cl (BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.129	0.016	12.3	15	0.130	0.010	0.005	3.98
K	cmol+/kg	0.313	0.017	5.4	16	0.310	0.010	0.005	1.68
Mg	cmol+/kg	0.929	0.037	4.0	15	0.930	0.014	0.012	1.28
Ca	cmol+/kg	4.21	0.387	9.2	15	4.10	0.301	0.125	2.96
Mn	cmol+/kg	0.122	0.017	14.2	11	0.118	0.012	0.007	5.36

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	5.26	0.654	12.4	8	5.35	0.430	0.289	5.50
Mg	cmol+/kg	0.892	0.080	8.9	10	0.925	0.050	0.031	3.53
Ca	cmol+/kg	4.60	0.489	10.6	10	4.65	0.305	0.193	4.21

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	4.46	0.958	21.5	44	4.42	0.493	0.181	4.05
Na	cmol+/kg	0.114	0.013	11.3	34	0.117	0.008	0.003	2.43
K	cmol+/kg	0.241	0.027	11.4	38	0.243	0.013	0.006	2.31
Ca	cmol+/kg	3.71	0.415	11.2	41	3.77	0.245	0.081	2.19
Mg	cmol+/kg	0.851	0.086	10.1	41	0.858	0.048	0.017	1.97
Mn	cmol+/kg	0.060	0.003	4.9	12	0.060	0.002	0.001	1.75

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ca	mg/kg	912	70.4	7.7	97	920	47.6	8.94	0.981
Cu	mg/kg	0.743	0.311	41.9	92	0.751	0.225	0.041	5.46
Fe	mg/kg	569	77.5	13.6	113	563	47.8	9.12	1.60
K	mg/kg	119	12.0	10.1	99	118	7.46	1.51	1.27

Method: Mehlich-3									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mg	mg/kg	112	8.27	7.4	98	113	5.06	1.04	0.931
Mn	mg/kg	56.5	7.66	13.6	116	57.0	5.01	0.889	1.57
Na	mg/kg	28.6	4.40	15.4	69	29.0	2.67	0.663	2.32
P	mg/kg	250	29.7	11.9	133	249	20.0	3.22	1.29
Zn	mg/kg	5.28	0.698	13.2	113	5.20	0.490	0.082	1.56
Al	mg/kg	854	84.6	9.9	54	860	61.5	14.4	1.69

Method: Extraction with 0.01M CaCl ₂ - 0.005M DTPA 1:10 (w/v)									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	0.878	0.243	27.7	86	0.900	0.125	0.033	3.74
Fe	mg/kg	156	58.6	37.7	99	158	34.2	7.36	4.73
Mn	mg/kg	23.3	4.05	17.4	102	23.4	2.29	0.502	2.16
Zn	mg/kg	3.20	0.572	17.9	95	3.20	0.370	0.073	2.29

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	18.1	2.67	14.7	62	18.6	1.78	0.423	2.34
N - NO ₃ (as N)	mg/kg	63.4	9.52	15.0	78	61.1	6.52	1.35	2.13

Method: Phosphorus and related analysis									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Bray (as P)	mg/kg	185	76.4	41.4	131	179	46.2	8.34	4.52
P - Olsen (as P)	mg/kg	55.1	11.9	21.6	176	55.3	7.20	1.12	2.03
P - Ox	mg/kg	627	83.8	13.4	13	615	47.5	29.0	4.63
P - AL (as P)	mg/kg	205	27.9	13.6	47	209	17.3	5.09	2.48

Method: UK Soil Methods									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P – NaHCO ₃ (1/20)	mg/l	63.9	9.25	14.5	57	64.4	6.38	1.53	2.40
K - NH ₄ NO ₃ (1/5)	mg/l	161	15.6	9.7	66	159	10.6	2.40	1.49
Mg - NH ₄ NO ₃ (1/5)	mg/l	141	19.3	13.8	66	140	12.0	2.98	2.12
pH - H ₂ O (2/5)	...	5.79	0.127	2.2	61	5.80	0.090	0.020	0.351



Indicative Values ISE 849



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Co	mg/kg	1.10	0.462	42.1	36	1.11	0.326	0.096	8.78
F	mg/kg	133	74.0	55.8	4	138	34.5	46.2	34.9
Ga	mg/kg	4.06	1.32	32.5	38	4.36	1.06	0.267	6.58
I	mg/kg	1.67	0.427	25.6	8	1.65	0.205	0.189	11.3
Mo	mg/kg	0.680	0.180	26.5	23	0.710	0.095	0.047	6.90
Se	mg/kg	0.708	0.365	51.5	8	1.10	0.100	0.161	22.8
Sn	mg/kg	1.06	0.582	55.0	17	1.46	0.406	0.177	16.7
Sb	mg/kg	0.621	0.240	38.7	16	0.618	0.162	0.075	12.1
Be	mg/kg	0.497	0.111	22.2	6	0.506	0.080	0.056	11.4
Ag	mg/kg	0.409	0.379	92.6	8	0.444	0.288	0.168	40.9
Bi	mg/kg	1.89	0.169	8.9	5	1.90	0.100	0.094	4.99
Ce	mg/kg	19.3	5.48	28.4	28	19.9	2.87	1.29	6.71
Nb	mg/kg	4.60	2.18	47.4	23	4.40	1.40	0.568	12.4
Nd	mg/kg	7.87	2.02	25.7	19	7.89	0.891	0.579	7.36
Sc	mg/kg	2.83	1.77	62.5	20	3.00	1.14	0.495	17.5
Th	mg/kg	2.81	0.970	34.5	18	3.00	0.850	0.286	10.2
U	mg/kg	0.972	0.328	33.8	18	1.00	0.180	0.097	9.95
Cs	mg/kg	1.03	0.680	66.2	10	1.46	0.448	0.269	26.2
W	mg/kg	1.51	0.566	37.6	10	1.75	0.400	0.224	14.9
Yb	mg/kg	0.803	0.235	29.2	5	0.830	0.140	0.131	16.3
Sm	mg/kg	2.04	1.07	52.3	7	2.00	0.580	0.505	24.7
Pr	mg/kg	2.58	0.781	30.3	4	2.56	0.350	0.488	18.9
Gd	mg/kg	1.35	0.193	14.3	4	1.34	0.090	0.120	8.92
Dy	mg/kg	1.44	0.093	6.5	5	1.45	0.038	0.052	3.62

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	1.95	1.62	83.4	27	2.52	0.837	0.390	20.1
Li	mg/kg	5.46	1.37	25.1	15	5.84	1.06	0.442	8.09
Se	mg/kg	0.284	0.092	32.5	13	0.278	0.058	0.032	11.3
Si	g/kg	0.488	0.129	26.4	5	0.537	0.060	0.072	14.8
Y	mg/kg	3.37	0.379	11.3	6	3.47	0.215	0.193	5.75
Sb	mg/kg	0.391	0.134	34.3	10	0.387	0.082	0.053	13.6
Tl	mg/kg	0.079	0.020	25.1	9	0.083	0.011	0.008	10.5
Ti	mg/kg	58.7	27.3	46.6	17	68.9	21.4	8.29	14.1
La	mg/kg	4.76	0.721	15.1	6	4.63	0.305	0.368	7.72
Sc	mg/kg	0.839	0.181	21.5	5	0.850	0.111	0.101	12.0

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Method: Acid extractable (So-called totals)									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
U	mg/kg	0.459	0.076	16.6	4	0.480	0.041	0.048	10.4
Method: Aqua Regia (ISO 11466)									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ag	µg/kg	29.5	2.53	8.6	4	29.3	1.25	1.58	5.35
B	mg/kg	2.65	2.00	75.6	30	3.14	1.27	0.458	17.3
Bi	mg/kg	0.060	0.013	22.2	5	0.059	0.008	0.007	12.4
La	mg/kg	5.05	0.224	4.4	6	5.08	0.137	0.114	2.27
Rb	mg/kg	2.77	0.237	8.5	4	2.76	0.112	0.148	5.33
Th	mg/kg	0.845	0.437	51.7	4	0.842	0.197	0.273	32.3
Y	mg/kg	3.02	0.065	2.1	4	3.00	0	0.040	1.34
Method: Extraction with 0.1M NaNO3									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ni	µg/kg	13.0	7.28	55.9	5	25.9	4.80	4.07	31.2
Method: Extraction with 0.01M CaCl2 1:10									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	µg/kg	120	0	-	5	120	0	0	0
B	µg/kg	79.4	24.4	30.8	19	82.0	14.3	7.00	8.82
Cu	µg/kg	37.1	11.0	29.8	18	36.5	8.30	3.25	8.77
Fe	mg/kg	3.80	1.43	37.6	18	3.68	1.04	0.422	11.1
N total soluble	mg/kg	85.9	14.4	16.8	6	88.4	6.20	7.36	8.57
P	mg/kg	1.08	0.381	35.3	32	1.15	0.301	0.084	7.80
SO4	mg/kg	133	20.6	15.5	9	126	18.0	8.58	6.45
Ni	µg/kg	25.2	3.23	12.8	6	25.0	0	1.65	6.53
Method: Soil characteristics									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
TIC=Tot.Inorg C(as CaCO3)	%	0.124	0.157	127.0	84	0.171	0.130	0.021	17.3
Fraction < 16 µm	%	8.71	4.15	47.6	46	8.63	2.83	0.764	8.78
Method: Other determinations									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B - Hot water	mg/kg	0.382	0.205	53.8	59	0.397	0.117	0.033	8.75

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	cmol+/kg	0.065	0.058	89.6	8	0.060	0.035	0.026	39.6

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. %
Na	cmol+/kg	0.157	0.053	33.7	7	0.158	0.042	0.025	15.9
K	cmol+/kg	0.299	0.039	12.9	6	0.309	0.016	0.020	6.60
Mg	cmol+/kg	0.850	0.116	13.6	7	0.860	0.082	0.055	6.44
Ca	cmol+/kg	4.52	1.05	23.3	7	4.60	0.400	0.497	11.0

Method: Pot. CEC using 1M NH₄Cl (BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	6.26	0.418	6.7	4	6.27	0.190	0.261	4.17
Al	cmol+/kg	0.082	0.019	22.8	6	0.086	0.009	0.010	11.6
Fe	cmol+/kg	0.017	0.007	40.9	10	0.018	0.003	0.003	16.1

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.125	0.033	26.2	9	0.126	0.024	0.014	10.9
K	cmol+/kg	0.300	0.070	23.3	10	0.303	0.040	0.028	9.22
Fe	cmol+/kg	0.094	0.017	18.2	5	0.090	0.010	0.010	10.2
Al	cmol+/kg	0.111	0.042	37.3	6	0.118	0.020	0.021	19.1

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	cmol+/kg	0.036	0.020	56.2	14	0.037	0.013	0.007	18.8

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	0.298	0.170	57.2	51	0.310	0.120	0.030	10.0
Se	mg/kg	0.030	0.016	53.0	4	0.030	0.008	0.010	33.1

Method: Extraction with Ca-lactate (VDLUFA, Germany)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	mg/kg	118	21.4	18.0	5	118	12.0	11.9	10.1



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Method: Extraction with double lactate (VDLUFA, Germany)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P	mg/kg	66.8	3.04	4.6	4	67.7	1.63	1.90	2.85
K	mg/kg	100.0	11.2	11.2	4	102	5.93	7.02	7.03

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
N - NO ₃ (as N)	mg/kg	53.6	5.97	11.1	5	53.0	3.00	3.34	6.22

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al - Ox	mg/kg	1032	193	18.7	13	1012	123	67.0	6.49
Fe - Ox	mg/kg	2501	464	18.6	13	2498	262	161	6.43
P - w (as P)	mg/l soil	10.9	2.52	23.0	12	11.1	1.63	0.908	8.31

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
SO ₄	mg/kg	100	45.2	45.1	10	92.5	25.6	17.9	17.8

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	3.31	0.899	27.2	7	3.30	0.700	0.425	12.8
Zn	mg/kg	6.82	0.481	7.0	7	6.98	0.320	0.227	3.33
Fe	g/kg	1.39	0.192	13.9	6	1.37	0.131	0.098	7.08
K	mg/kg	111	12.2	11.0	7	111	6.00	5.77	5.20
Mg	mg/kg	124	11.5	9.3	7	123	7.80	5.44	4.39
Mn	mg/kg	91.6	10.1	11.0	7	89.2	5.53	4.78	5.22
P	mg/kg	369	39.1	10.6	7	359	25.0	18.5	5.01
Na	mg/kg	24.4	8.22	33.6	7	25.1	4.45	3.88	15.9
S	mg/kg	53.2	12.4	23.4	7	53.3	7.30	5.88	11.0
Ca	g/kg	1.12	0.173	15.4	7	1.10	0.100	0.082	7.30