WAGENINGEN EVALUATING PROGRAMS

FOR ANALYTICAL LABORATORIES

Certificate of Analysis

International Soil-Analytical Exchange

REFERENCE MATERIAL

ISE sample 838

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis ISE 838

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 mean and standard deviation are calculated using all reported data when at least 8 results are left after removal of reported 'lower than' (<) and 0 (= zero) values. No outliers are removed.

This report is divided into three sections: Consensus Values, Indicative Values and Values for Information. The division is made on the reliability of the data. Consensus Values are based on at least 16 results while the coefficient of variation is smaller than 25 %. Indicative Values are based on at least 8 and less than 16 results or a coefficient of variation between 25 % and 50 %. Other values, based on more than 2 and less than 8 results or a coefficient of variation higher than 50 %, are given for information only.

In the sections with Consensus Values and Indicative Values the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median and MAD (Median of Absolute Deviation) and the uncertainty in the consensus values. The confidence limits (at 95 % probability) are calculated for these determinands.
In the section with Information Values the following parameters are given: median, MAD and number of results. For determinands which have at least 5 results reported as smaller than (<) the median of these 'smaller than results' is calculated. In some cases this median of '<' values is much smaller than median and mean of the indicative values. This may be caused by a too optimistic (too low) value for the detection limit reported by a (small) majority of participating laboratories who report '<'-values.

All values, expressed on a weight basis (kg or %), are reported in oven dry (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 838 of Calcareous soil from Spain is prepared for the WEPAL proficiency programs. The sample is used in 2 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
2023	2	3
2020	2	1

Consensus Values ISE 838

Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Al	g/kg	12.3	0.78	6.3	29	12.3	0.56	0.18	12.03 - 12.63
Ba	mg/kg	477	32.3	6.8	27	474	21.0	7.8	464 - 489
C - elementary	g/kg	97.0	2.44	2.5	55	96.4	1.70	0.41	96.3 - 97.6
Ca	g/kg	305	6.9	2.2	34	305	5.2	1.5	302.9 - 307.7
Co	mg/kg	4.32	0.682	15.8	23	4.26	0.480	0.178	4.03 - 4.62
Cr	mg/kg	13.7	3.15	23.1	30	14.0	2.27	0.72	12.5 - 14.8
Fe	g/kg	6.78	0.632	9.3	35	6.85	0.440	0.134	6.56 - 7.00
K	mg/kg	1870	267	14.3	38	1910	197	54	1783 - 1958
Mg	mg/kg	7930	1393	17.6	33	7690	971	303	7440 - 8430
Mn	mg/kg	139	23.2	16.7	34	134	16.3	5.0	131 - 147
N - elementary	g/kg	0.613	0.1254	20.5	94	0.624	0.0870	0.0162	0.587 - 0.639
Ni	mg/kg	7.36	0.823	11.2	28	7.50	0.605	0.194	7.04 - 7.67
P	mg/kg	304	53.1	17.5	29	304	38.7	12.3	284 - 324
Rb	mg/kg	10.9	1.24	11.4	17	11.0	0.90	0.38	10.2 - 11.5
Si	g/kg	71.2	4.05	5.7	25	71.0	3.00	1.01	69.5 - 72.9
Sr	mg/kg	137	8.4	6.1	25	136	5.8	2.1	133.8 - 140.7
Ti	mg/kg	992	99.9	10.1	30	998	70.5	22.8	955 - 1029
V	mg/kg	18.5	2.50	13.5	29	18.7	1.70	0.58	17.6 - 19.5
Zn	mg/kg	13.0	2.20	16.8	30	13.2	1.57	0.50	12.2 - 13.9
Zr	mg/kg	60.7	7.88	13.0	19	60.6	5.20	2.26	56.9 - 64.4

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Al	g/kg	8.07	1.144	14.2	18	8.06	0.748	0.337	7.50 - 8.63
As	mg/kg	4.51	0.492	10.9	33	4.56	0.340	0.107	4.34 - 4.69
Ba	mg/kg	445	33.2	7.5	22	440	22.8	8.9	430 - 459
Ca	g/kg	298	18.7	6.3	22	298	13.0	5.0	290 - 306
Co	mg/kg	3.92	0.602	15.4	32	3.96	0.395	0.133	3.70 - 4.13
Cr	mg/kg	9.33	1.500	16.1	40	9.45	1.041	0.297	8.85 - 9.81
Cu	mg/kg	7.53	0.627	8.3	40	7.60	0.430	0.124	7.33 - 7.73
Fe	g/kg	5.49	0.961	17.5	21	5.36	0.681	0.262	5.05 - 5.92
K	mg/kg	1220	248	20.3	23	1280	164	65	1115 - 1330
Mg	mg/kg	5450	455	8.3	21	5320	319	124	5242 - 5655
Mn	mg/kg	112	14.5	13.0	24	110	10.0	3.7	106 - 118
N	g/kg	0.593	0.0987	16.6	57	0.609	0.0710	0.0163	0.566 - 0.619
Na	mg/kg	121	27.3	22.5	17	128	19.5	8.3	107 - 135
Ni	mg/kg	6.57	0.999	15.2	38	6.59	0.677	0.203	6.25 - 6.90

Method: Acid extractable (So-called totals) (cont.)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
P	mg/kg	283	34.2	12.1	30	285	23.4	7.8	271 - 296
S	mg/kg	192	26.8	14.0	22	197	19.1	7.1	180 - 204
V	mg/kg	15.7	1.74	11.1	23	15.4	1.16	0.45	14.9 - 16.4
Zn	mg/kg	11.0	1.26	11.4	39	11.0	0.90	0.25	10.6 - 11.4

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Al	g/kg	7.61	0.672	8.8	38	7.70	0.454	0.136	7.39 - 7.83
As	mg/kg	4.64	0.585	12.6	43	4.68	0.420	0.112	4.46 - 4.82
Ba	mg/kg	436	37.1	8.5	20	432	25.4	10.4	419 - 454
Ca	g/kg	299	28.0	9.4	31	299	20.5	6.3	288 - 309
Cd	mg/kg	0.0421	0.0049	11.6	26	0.0440	0.0040	0.0012	0.0401 - 0.0441
Co	mg/kg	3.87	0.701	18.1	42	3.91	0.487	0.135	3.65 - 4.09
Cr	mg/kg	9.37	1.820	19.4	57	9.45	1.250	0.301	8.89 - 9.85
Cu	mg/kg	7.64	1.265	16.5	58	7.74	0.878	0.208	7.31 - 7.98
Fe	g/kg	5.24	0.509	9.7	40	5.22	0.349	0.101	5.08 - 5.40
K	mg/kg	1190	124	10.5	34	1160	86	27	1143 - 1230
Mg	mg/kg	5330	660	12.4	37	5370	455	136	5108 - 5548
Mn	mg/kg	105	14.4	13.7	42	107	9.8	2.8	101 - 110
Na	mg/kg	137	31.2	22.8	25	143	21.0	7.8	124 - 149
Ni	mg/kg	6.52	1.182	18.1	54	6.61	0.810	0.201	6.19 - 6.84
P	mg/kg	291	42.7	14.7	29	288	29.3	9.9	275 - 307
S	mg/kg	196	37.6	19.2	23	198	24.3	9.8	179 - 212
Ti	mg/kg	129	18.6	14.4	17	130	13.0	5.6	120 - 139
V	mg/kg	16.0	1.48	9.3	27	16.3	1.00	0.36	15.4 - 16.6
Zn	mg/kg	10.4	1.77	17.0	56	10.5	1.22	0.30	9.93 - 10.9

Method: Extraction with boiling 2M HNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Co	mg/kg	3.64	0.503	13.8	19	3.67	0.330	0.144	3.39 - 3.88
Cu	mg/kg	5.56	1.037	18.7	24	5.72	0.696	0.265	5.12 - 5.99
Ni	mg/kg	4.95	0.944	19.1	24	4.88	0.650	0.241	4.55 - 5.35

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
C - org others (W&B a.o.)	g/kg	5.30	1.157	21.8	90	5.46	0.800	0.152	5.05 - 5.54
TIC=Tot.Inorg C(as CaCO3)	%	75.4	4.38	5.8	58	74.9	3.14	0.72	74.3 - 76.6

Method: Soil characteristics (cont.)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
TC=Total C (org.+inorg.)	g/kg	96.9	3.82	3.9	74	96.0	2.77	0.56	96.0 - 97.8
EC-SC (ISO 11265)	mS/m	23.8	2.93	12.3	78	23.9	2.08	0.41	23.1 - 24.5
pH - CaCl2	...	7.82	0.208	2.7	55	7.80	0.140	0.035	7.76 - 7.87
pH - H2O	...	8.19	0.341	4.2	179	8.20	0.230	0.032	8.14 - 8.24
pH - KCl	...	8.04	0.393	4.9	79	8.04	0.270	0.055	7.96 - 8.13
Fraction < 63 µm	%	73.6	12.14	16.5	26	74.6	7.77	2.98	68.7 - 78.5

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Moisture-content	%	1.79	0.318	17.8	73	1.77	0.214	0.047	1.71 - 1.86

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
K	cmol+/kg	0.391	0.0507	13.0	111	0.392	0.0350	0.0060	0.382 - 0.401
Mg	cmol+/kg	1.14	0.230	20.2	110	1.14	0.160	0.027	1.09 - 1.18

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
CEC	cmol+/kg	8.00	0.836	10.4	19	8.10	0.600	0.240	7.60 - 8.41

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Ca	mg/kg	36400	7720	21.2	35	34600	5640	1630	33790 - 39090
Cu	mg/kg	0.919	0.2027	22.1	33	0.935	0.1450	0.0441	0.847 - 0.991
K	mg/kg	145	14.7	10.2	38	144	10.0	3.0	140 - 149
Mg	mg/kg	282	30.6	10.8	37	279	20.0	6.3	272 - 292
Mn	mg/kg	6.73	1.442	21.4	33	6.58	1.020	0.314	6.22 - 7.24
Na	mg/kg	18.9	4.22	22.3	23	19.0	2.96	1.10	17.1 - 20.7
Zn	mg/kg	1.15	0.203	17.6	34	1.20	0.152	0.043	1.08 - 1.22

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Cu	mg/kg	1.57	0.188	12.0	28	1.56	0.125	0.044	1.49 - 1.64
Mn	mg/kg	5.03	0.826	16.4	28	5.15	0.550	0.195	4.71 - 5.35

Consensus Values ISE 838

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
N - NO3 (as N)	mg/kg	76.2	7.95	10.4	27	74.9	5.64	1.91	73.1 - 79.4

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
P - AL (as P)	mg/kg	70.5	14.59	20.7	20	70.6	10.47	4.08	63.7 - 77.3
P - Olsen (as P)	mg/kg	47.3	7.09	15.0	78	47.9	4.90	1.00	45.7 - 48.9

Method: UK Soil Methods

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
K - NH4NO3 (1/5)	mg/l	134	17.7	13.3	29	136	12.5	4.1	127 - 140
Mg - NH4NO3 (1/5)	mg/l	96.3	12.00	12.5	29	97.0	7.76	2.79	91.7 - 101
P – NaHCO3 (1/20)	mg/l	37.1	8.06	21.7	23	39.0	6.00	2.10	33.6 - 40.6
pH - H2O (2/5)	…	8.28	0.202	2.4	27	8.30	0.130	0.049	8.20 - 8.36

Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
As	mg/kg	4.22	1.639	38.8	23	4.40	1.100	0.427	3.51 - 4.93
Br	mg/kg	19.5	4.38	22.5	15	19.0	3.00	1.41	17.1 - 21.9
Ce	mg/kg	14.3	2.73	19.1	13	15.0	2.00	0.95	12.6 - 15.9
Cu	mg/kg	8.01	2.611	32.6	29	8.14	1.760	0.606	7.02 - 9.00
Ga	mg/kg	4.27	1.828	42.8	15	4.00	1.300	0.590	3.27 - 5.28
Hg	µg/kg	10.1	2.67	26.5	14	10.8	1.95	0.89	8.55 - 11.6
La	mg/kg	7.93	1.376	17.4	13	7.81	0.810	0.477	7.10 - 8.75
Mo	mg/kg	0.148	0.0645	43.7	8	0.163	0.0480	0.0285	0.0952 - 0.200
Na	mg/kg	360	169.3	47.0	24	398	119.0	43.2	289 - 432
Nb	mg/kg	4.14	1.753	42.3	9	4.20	1.214	0.730	2.82 - 5.46
Nd	mg/kg	7.53	2.410	32.0	11	7.62	1.697	0.908	5.93 - 9.13
Pb	mg/kg	4.56	1.557	34.1	25	5.10	1.100	0.389	3.92 - 5.20
Sn	mg/kg	0.754	0.3558	47.2	11	0.860	0.2790	0.1341	0.518 - 0.990
Th	mg/kg	2.66	1.249	47.0	8	2.49	0.794	0.552	1.64 - 3.67
Y	mg/kg	6.43	0.866	13.5	15	6.60	0.600	0.279	5.95 - 6.91

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Be	mg/kg	0.270	0.0561	20.8	10	0.259	0.0351	0.0222	0.231 - 0.310
Cd	mg/kg	0.0492	0.0163	33.0	11	0.0500	0.0110	0.0061	0.0384 - 0.0600
Mo	mg/kg	0.140	0.0510	36.6	8	0.130	0.0325	0.0225	0.0979 - 0.181
Pb	mg/kg	3.20	0.909	28.4	26	3.48	0.585	0.223	2.83 - 3.56

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Be	mg/kg	0.302	0.0712	23.6	11	0.310	0.0530	0.0268	0.255 - 0.349
Li	mg/kg	5.42	1.003	18.5	11	5.47	0.718	0.378	4.76 - 6.09
Pb	mg/kg	3.32	0.910	27.4	51	3.47	0.640	0.159	3.06 - 3.58
Sb	mg/kg	0.303	0.0208	6.9	11	0.305	0.0163	0.0078	0.289 - 0.317
Sn	mg/kg	0.331	0.0935	28.2	8	0.366	0.0690	0.0413	0.255 - 0.408
Sr	mg/kg	134	10.6	7.9	11	135	7.0	4.0	127 - 141

Method: Extraction with boiling 2M HNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Cd	mg/kg	0.0401	0.0171	42.7	10	0.0414	0.0124	0.0068	0.0280 - 0.0521
Cr	mg/kg	3.65	1.290	35.4	19	3.63	0.840	0.370	3.03 - 4.26
Hg	µg/kg	9.11	4.266	46.8	11	9.88	3.270	1.608	6.28 - 11.9

Method: Extraction with boiling 2M HNO3 (cont.)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Pb	mg/kg	2.49	0.911	36.6	19	2.64	0.620	0.261	2.05 - 2.93
Zn	mg/kg	6.29	1.706	27.1	22	6.69	1.210	0.455	5.53 - 7.04

Method: Extraction with 0.01M CaCl2 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Cu	µg/kg	36.1	2.64	7.3	8	36.5	1.89	1.17	33.9 - 38.2
K	mg/kg	77.0	3.43	4.5	14	76.8	2.45	1.15	75.1 - 79.0
Mg	mg/kg	81.6	2.09	2.6	10	81.6	1.45	0.83	80.2 - 83.1
N - NH4 (as N)	mg/kg	2.35	1.039	44.3	15	2.32	0.675	0.335	1.77 - 2.92
N - NO3 (as N)	mg/kg	80.5	7.84	9.7	15	80.0	5.73	2.53	76.2 - 84.8
Na	mg/kg	10.2	0.35	3.4	12	10.3	0.25	0.13	9.98 - 10.42

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
TOC=Total Org. C	g/kg	6.37	2.181	34.2	76	6.80	1.606	0.313	5.87 - 6.87
Org.matter (L.O.I.)	%	3.40	0.992	29.2	66	3.54	0.686	0.153	3.15 - 3.64
Active Lime (as CaCO3)	%	19.5	7.93	40.6	19	18.7	5.40	2.27	15.7 - 23.3
Fraction < 2 µm	%	19.2	8.07	42.0	46	19.6	5.61	1.49	16.8 - 21.6
Fraction < 16 µm	%	43.2	19.30	44.7	11	46.5	13.40	7.27	30.3 - 56.0
Fraction > 63 µm	%	22.7	7.85	34.6	24	23.2	5.36	2.00	19.4 - 26.0

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
B - Hot water	mg/kg	0.503	0.2358	46.9	20	0.565	0.1600	0.0659	0.393 - 0.613
delta 13C	‰ V-PDB	-10.3	0.56	5.4	8	-10.3	0.40	0.25	-10.70 - -9.80

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
CEC	cmol+/kg	6.88	3.209	46.7	64	7.77	2.390	0.501	6.08 - 7.68
Ca	cmol+/kg	32.5	14.17	43.6	103	33.3	9.92	1.74	29.7 - 35.3

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Ca	cmol+/kg	7.79	0.860	11.0	12	7.90	0.607	0.310	7.25 - 8.33
K	cmol+/kg	0.351	0.0278	7.9	12	0.352	0.0180	0.0100	0.333 - 0.368
Mg	cmol+/kg	0.817	0.0288	3.5	12	0.822	0.0190	0.0104	0.799 - 0.835
Na	cmol+/kg	0.0497	0.0026	5.3	10	0.0495	0.0018	0.0010	0.0478 - 0.0515

Indicative Values ISE 838

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
B	mg/kg	0.522	0.2122	40.6	22	0.520	0.1450	0.0566	0.428	-	0.616
Fe	mg/kg	3.18	1.422	44.7	26	3.22	0.970	0.348	2.60	-	3.75

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Fe	mg/kg	3.47	1.481	42.7	27	3.65	1.030	0.356	2.88	-	4.05
Zn	mg/kg	0.720	0.2149	29.8	27	0.750	0.1500	0.0517	0.636	-	0.805

Indicative Values ISE 838

Method: Real totals

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
Ag	mg/kg	0.570	0.2502	3	2.000	5
B	mg/kg	28.5	23.63	4		
Bi	mg/kg	-	-	0	3.00	6
Cd	mg/kg	0.0620	0.0240	9	0.5000	11
Cs	mg/kg	7.50	5.950	6		
Ge	mg/kg	-	-	0	1.00	5
I	mg/kg	25.8	1.42	6		
Li	mg/kg	6.81	0.455	4		
S	mg/kg	205	105.0	23		
Sb	mg/kg	0.600	0.5300	11	0.850	6
Sc	mg/kg	14.5	11.74	6		
Se	mg/kg	1.28	0.418	3	2.50	6
Tl	mg/kg	0.0915	0.0419	8	2.0000	7
U	mg/kg	0.455	0.0335	6	3.000	6
W	mg/kg	2.00	0.900	3		

Method: Acid extractable (So-called totals)

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
Ag	mg/kg	0.0100	0.0003	4	1.0000	10
B	mg/kg	3.70	2.359	10		
Hg	µg/kg	30.3	16.68	9	50.0	16
Li	mg/kg	5.13	1.011	5		
Sb	mg/kg	0.280	0.0050	3	1.000	15
Se	mg/kg	0.0880	0.0020	5	1.2500	12
Sn	mg/kg	0.349	0.1590	8	1.500	14
Sr	mg/kg	140	7.3	7		
Ti	mg/kg	153	61.6	7		
Tl	mg/kg	0.0620	0.0040	3	1.0000	10
U	mg/kg	0.191	0.0090	5		

Method: Aqua Regia (ISO 11466)

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
Ag	µg/kg	14.2	5.68	3	500.0	5
B	mg/kg	6.88	4.500	11		

Method: Aqua Regia (ISO 11466)					Results smaller than (<)	(cont.)
Element	**Unit**	**Median**	**MAD**	**N**	**Median of <**	**N**
Hg	µg/kg	14.5	6.46	16	50.0	17
Mo	mg/kg	0.130	0.0470	14	0.667	13
Se	mg/kg	0.137	0.0489	10	0.750	6
Tl	mg/kg	0.0490	0.0014	5	0.2650	8
U	mg/kg	0.165	0.0066	6		

Method: Extraction with boiling 2M HNO3					Results smaller than (<)	
Element	**Unit**	**Median**	**MAD**	**N**	**Median of <**	**N**
Mo	mg/kg	0.154	0.0460	6	0.250	14
Tl	mg/kg	-	-	0	0.0500	7

Method: Extraction with 0.1M NaNO3					Results smaller than (<)	
Element	**Unit**	**Median**	**MAD**	**N**	**Median of <**	**N**
Cu	µg/kg	33.1	2.82	6	50.0	5

Method: Extraction with 0.01M CaCl2 1:10					Results smaller than (<)	
Element	**Unit**	**Median**	**MAD**	**N**	**Median of <**	**N**
B	µg/kg	233	25.0	7		
Co	µg/kg	3.29	0.550	4		
Fe	mg/kg	0.570	0.4577	3	1.000	5
Mn	mg/kg	0.134	0.0177	4		
N total soluble	mg/kg	85.3	1.37	4		
P	mg/kg	0.196	0.1040	9	0.200	6
SO4	mg/kg	26.2	4.75	6		
Zn	µg/kg	-	-	0	150	7

Method: Other determinations				
Element	**Unit**	**Median**	**MAD**	**N**
delta 15N	‰ Air	8.23	0.380	7

Method: Fluoride (Swiss standard procedure)				
Element	**Unit**	**Median**	**MAD**	**N**
F - Total	mg/kg	230	21.5	6

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

Element	Unit	Median	MAD	N
Al	cmol+/kg	0.0200	-	3
Na	cmol+/kg	0.0800	0.0300	93

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

Element	Unit	Median	MAD	N
CEC	cmol+/kg	10.8	3.20	6

Method: Pot. CEC using 1M NH4Cl (BZE)

Element	Unit	Median	MAD	N
Ca	cmol+/kg	19.9	2.13	5
K	cmol+/kg	0.450	0.0040	5
Mg	cmol+/kg	1.12	0.183	5
Na	cmol+/kg	0.427	0.3680	4

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

Element	Unit	Median	MAD	N
CEC	cmol+/kg	13.3	0.10	3
Ca	cmol+/kg	19.6	2.54	4
K	cmol+/kg	0.455	0.0100	4
Mg	cmol+/kg	0.950	0.0700	4
Na	cmol+/kg	0.0500	0.0050	4

Method: Mehlich-3

					Results smaller than (<)	
Element	Unit	Median	MAD	N	Median of <	N
Al	mg/kg	2.36	1.847	11	5.50	8
P	mg/kg	2.58	2.118	28	3.25	16

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

Element	Unit	Median	MAD	N
Cl	mg/kg	10.9	1.92	5
N - NO3 (as N)	mg/kg	74.0	1.00	3

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

Element	Unit	Median	MAD	N

N - NH4 (as N)	mg/kg	3.60	1.905	19

Method: Phosphorus and related analysis

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
P - Ox	mg/kg	141	3.8	4		
Al - Ox	mg/kg	120	5.2	3		
P - w (as P)	mg/l soil	3.00	1.099	5		
P - Bray (as P)	mg/kg	0.892	0.5965	36	2.080	5

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

Element	Unit	Median	MAD	N
SO4	mg/kg	34.6	11.54	5

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

Element	Unit	Median	MAD	N
Al	g/kg	0.0084	0.0044	3
Cr	mg/kg	0.0840	0.0320	3
Cu	mg/kg	1.53	0.746	4
Fe	g/kg	0.0391	0.0230	4
K	mg/kg	186	59.7	4
Mg	mg/kg	1730	627	4
Mn	mg/kg	23.6	10.60	4
Na	mg/kg	72.2	-	3
Ni	mg/kg	1.02	0.618	3
P	mg/kg	49.2	13.36	3
S	mg/kg	162	73.2	3
Zn	mg/kg	0.734	0.4600	4