



**WAGENINGEN EVALUATING PROGRAMS  
FOR ANALYTICAL LABORATORIES**

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**Certificate of Analysis**



**International Soil-Analytical Exchange**

**REFERENCE MATERIAL**

**ISE sample 869**



## 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 869 of Clay, from Netherlands, is prepared for the WEPAL proficiency programs. The sample has been used in 5 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
2024	1	3
2022	1	1
2018	1	2
2015	1	2
2012	2	1



## Consensus Values ISE 869



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	47.3	1.98	4.2	114	47.2	1.13	0.232	0.491
As	mg/kg	12.3	1.56	12.7	107	12.3	1.10	0.188	1.53
Ba	mg/kg	268	20.7	7.7	108	268	12.0	2.49	0.927
Br	mg/kg	14.8	1.38	9.3	60	14.9	0.835	0.223	1.51
Ca	g/kg	37.0	1.81	4.9	123	36.8	1.07	0.204	0.551
Cd	mg/kg	0.227	0.038	16.9	37	0.230	0.020	0.008	3.48
Co	mg/kg	8.46	1.04	12.3	105	8.53	0.614	0.127	1.50
Cr	mg/kg	77.3	9.62	12.4	134	76.9	5.98	1.04	1.34
Cu	mg/kg	11.9	2.14	17.9	88	12.4	1.39	0.285	2.39
Fe	g/kg	25.0	0.981	3.9	141	25.0	0.600	0.103	0.414
Ga	mg/kg	11.3	1.55	13.7	55	11.3	0.967	0.261	2.31
I	mg/kg	11.0	1.29	11.7	23	11.0	0.900	0.336	3.04
K	mg/kg	16725	737	4.4	143	16713	435	77.1	0.461
Li	mg/kg	40.0	3.21	8.0	11	39.6	1.67	1.21	3.02
Mg	mg/kg	8519	500	5.9	112	8526	295	59.1	0.693
Mn	mg/kg	531	30.6	5.8	124	531	18.5	3.44	0.647
Na	mg/kg	5963	369	6.2	125	6010	214	41.3	0.692
Ni	mg/kg	25.2	2.45	9.7	98	25.3	1.40	0.309	1.22
P	mg/kg	640	46.6	7.3	89	641	28.4	6.18	0.964
Pb	mg/kg	37.0	3.20	8.7	91	37.2	1.90	0.420	1.13
Rb	mg/kg	88.2	4.66	5.3	86	87.9	2.60	0.628	0.712
S	mg/kg	1244	172	13.9	96	1225	113	22.0	1.77
Si	g/kg	310	7.74	2.5	86	310	4.50	1.04	0.336
Sn	mg/kg	3.03	0.448	14.8	37	3.03	0.260	0.092	3.04
Sr	mg/kg	142	9.58	6.7	83	143	6.00	1.31	0.924
Y	mg/kg	23.3	1.85	7.9	51	23.2	1.20	0.324	1.39
Zn	mg/kg	91.0	6.21	6.8	130	90.9	3.90	0.680	0.748
Zr	mg/kg	363	25.0	6.9	64	360	15.7	3.91	1.08
C-elementary	g/kg	30.5	0.968	3.2	147	30.5	0.600	0.100	0.327
Sb	mg/kg	0.729	0.151	20.6	54	0.730	0.080	0.026	3.51
Be	mg/kg	1.49	0.248	16.6	15	1.53	0.130	0.080	5.36
Tl	mg/kg	0.555	0.058	10.4	17	0.560	0.040	0.017	3.14
V	mg/kg	67.9	5.26	7.8	107	68.0	3.60	0.636	0.937
Ti	mg/kg	3353	201	6.0	108	3340	119	24.2	0.721
N - elementary	g/kg	1.72	0.143	8.3	252	1.72	0.085	0.011	0.655
Ce	mg/kg	59.1	5.97	10.1	77	58.9	3.60	0.851	1.44
La	mg/kg	29.3	2.50	8.5	79	29.0	1.40	0.352	1.20



## Consensus Values ISE 869



### Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Nb	mg/kg	11.9	1.20	10.1	41	12.0	0.700	0.235	1.97
Nd	mg/kg	26.6	4.71	17.7	49	26.3	3.00	0.841	3.16
Sc	mg/kg	8.40	0.752	8.9	61	8.40	0.440	0.120	1.43
Th	mg/kg	9.35	0.841	9.0	68	9.39	0.515	0.127	1.36
U	mg/kg	2.36	0.314	13.3	50	2.38	0.200	0.055	2.35
Cs	mg/kg	6.44	0.752	11.7	52	6.50	0.497	0.130	2.02
Hg	µg/kg	95.8	8.16	8.5	72	96.3	4.92	1.20	1.25

(cont.)

### Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	17.2	4.77	27.8	60	17.3	2.78	0.770	4.48
As	mg/kg	10.2	1.23	12.1	92	10.2	0.801	0.161	1.58
Ba	mg/kg	39.6	10.4	26.3	62	41.2	6.13	1.65	4.18
Ca	g/kg	35.2	2.17	6.2	74	35.0	1.36	0.315	0.894
Cd	mg/kg	0.227	0.042	18.5	88	0.230	0.025	0.006	2.46
Co	mg/kg	6.98	0.772	11.1	99	6.91	0.492	0.097	1.39
Cr	mg/kg	35.4	6.25	17.6	118	35.5	3.69	0.719	2.03
Cu	mg/kg	10.3	1.23	11.9	126	10.2	0.793	0.136	1.33
Fe	g/kg	21.2	2.24	10.5	74	21.0	1.58	0.325	1.53
K	mg/kg	4173	1392	33.4	75	4256	817	201	4.81
Li	mg/kg	25.0	2.71	10.8	11	25.2	1.05	1.02	4.07
Mg	mg/kg	6960	644	9.3	69	6960	410	97.0	1.39
Mn	mg/kg	471	34.5	7.3	87	469	17.0	4.63	0.983
N	g/kg	1.69	0.145	8.6	129	1.70	0.083	0.016	0.945
Ni	mg/kg	21.0	2.23	10.7	114	21.0	1.20	0.262	1.25
P	mg/kg	581	54.6	9.4	93	584	32.0	7.07	1.22
Pb	mg/kg	30.4	3.14	10.3	120	30.2	1.94	0.358	1.18
S	mg/kg	1279	112	8.8	52	1277	64.5	19.5	1.52
Sn	mg/kg	1.88	0.445	23.7	36	1.88	0.262	0.093	4.94
Sr	mg/kg	89.6	5.87	6.6	17	88.8	3.31	1.78	1.99
Zn	mg/kg	83.1	8.82	10.6	129	83.0	5.70	0.971	1.17
V	mg/kg	36.2	8.21	22.7	63	37.5	5.82	1.29	3.57
Be	mg/kg	0.847	0.192	22.7	47	0.860	0.125	0.035	4.13
Hg	µg/kg	95.5	14.9	15.6	73	97.7	9.70	2.17	2.28



## Consensus Values ISE 869



Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ag	µg/kg	88.4	9.30	10.5	10	89.3	5.65	3.68	4.16
Al	g/kg	17.5	2.91	16.6	101	17.6	1.84	0.361	2.07
As	mg/kg	10.5	0.814	7.7	126	10.5	0.510	0.091	0.863
B	mg/kg	27.7	5.83	21.0	50	27.5	3.45	1.03	3.72
Ba	mg/kg	39.8	7.70	19.3	42	41.1	4.50	1.48	3.73
Be	mg/kg	0.879	0.095	10.8	51	0.886	0.054	0.017	1.89
Bi	mg/kg	0.234	0.020	8.6	9	0.230	0.011	0.008	3.60
Ca	g/kg	34.8	1.89	5.4	118	34.8	1.28	0.217	0.624
Cd	mg/kg	0.228	0.038	16.7	150	0.230	0.021	0.004	1.71
Co	mg/kg	7.18	0.568	7.9	118	7.21	0.340	0.065	0.910
Cr	mg/kg	35.1	4.76	13.6	172	35.5	2.95	0.454	1.29
Cu	mg/kg	10.5	1.10	10.5	169	10.5	0.740	0.106	1.01
Fe	g/kg	21.5	1.56	7.3	130	21.5	1.04	0.172	0.797
Hg	µg/kg	97.7	10.5	10.8	75	98.0	7.00	1.52	1.56
K	mg/kg	4513	636	14.1	105	4551	393	77.6	1.72
Li	mg/kg	27.2	5.92	21.7	27	27.8	3.89	1.42	5.23
Mg	mg/kg	7102	490	6.9	115	7080	313	57.2	0.805
Mn	mg/kg	467	31.5	6.7	134	467	20.0	3.41	0.729
Mo	mg/kg	0.322	0.089	27.7	60	0.330	0.052	0.014	4.48
Na	mg/kg	177	30.2	17.0	89	182	18.3	4.01	2.26
Ni	mg/kg	21.3	1.90	8.9	175	21.2	1.27	0.180	0.843
P	mg/kg	571	40.4	7.1	115	567	24.8	4.71	0.825
Pb	mg/kg	30.8	3.33	10.8	176	30.8	2.09	0.313	1.02
S	mg/kg	1242	79.3	6.4	92	1244	54.3	10.3	0.832
Sb	mg/kg	0.327	0.049	14.9	34	0.330	0.029	0.010	3.20
Se	mg/kg	0.265	0.062	23.4	38	0.274	0.036	0.013	4.75
Sn	mg/kg	1.84	0.272	14.8	29	1.85	0.150	0.063	3.43
Sr	mg/kg	89.3	9.03	10.1	32	89.3	5.90	2.00	2.24
Ti	mg/kg	353	91.6	25.9	32	349	55.7	20.2	5.73
Tl	mg/kg	0.234	0.018	7.9	30	0.237	0.011	0.004	1.80
U	mg/kg	0.718	0.079	10.9	28	0.724	0.050	0.019	2.58
V	mg/kg	35.5	5.46	15.4	69	36.0	3.03	0.821	2.31
Zn	mg/kg	82.5	4.92	6.0	176	82.3	3.25	0.464	0.562



## Consensus Values ISE 869



### Method: Extraction with boiling 2M HNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	mg/kg	0.229	0.020	8.8	90	0.234	0.011	0.003	1.16
Co	mg/kg	6.43	0.368	5.7	87	6.40	0.248	0.049	0.768
Cr	mg/kg	20.7	1.51	7.3	101	20.6	0.800	0.188	0.911
Cu	mg/kg	9.56	0.619	6.5	101	9.58	0.390	0.077	0.805
Hg	µg/kg	86.1	8.60	10.0	79	86.0	6.00	1.21	1.40
Mo	mg/kg	0.159	0.033	20.5	43	0.158	0.022	0.006	3.92
Ni	mg/kg	18.0	1.05	5.8	101	18.0	0.700	0.131	0.724
Pb	mg/kg	31.9	2.13	6.7	101	31.9	1.28	0.265	0.829
Tl	mg/kg	0.122	0.008	6.6	29	0.121	0.003	0.002	1.53
Zn	mg/kg	76.6	4.52	5.9	101	76.4	2.96	0.562	0.734

### Method: Extraction with 0.1M NaNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	µg/kg	60.4	8.19	13.6	34	61.2	5.60	1.76	2.91
Ni	µg/kg	24.9	5.06	20.3	26	25.5	3.07	1.24	4.98

### Method: Extraction with 0.01M CaCl2 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	µg/kg	491	71.6	14.6	20	494	32.3	20.0	4.08
K	mg/kg	152	11.6	7.7	44	151	6.96	2.19	1.45
Mg	mg/kg	105	7.66	7.3	37	105	4.90	1.57	1.50
Mn	mg/kg	4.45	0.505	11.4	19	4.61	0.308	0.145	3.26
N - NH4 (as N)	mg/kg	7.89	2.31	29.3	40	7.97	1.47	0.456	5.78
Na	mg/kg	18.6	1.63	8.8	33	18.8	0.900	0.354	1.91
P	mg/kg	0.715	0.189	26.4	36	0.735	0.095	0.039	5.49

### Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pH - H2O	...	7.66	0.242	3.2	419	7.66	0.160	0.015	0.193
pH - KCl	...	7.18	0.201	2.8	203	7.19	0.140	0.018	0.245
pH - CaCl2	...	7.24	0.149	2.1	182	7.23	0.096	0.014	0.191
Fraction < 2 µm	%	24.6	5.24	21.3	142	24.2	3.45	0.550	2.24
TIC=Tot.Inorg C(as CaCO3)	%	8.26	1.18	14.3	164	8.29	0.707	0.116	1.40
EC-SC (ISO 11265)	mS/m	22.1	2.51	11.4	183	22.2	1.40	0.232	1.05
Fraction < 63 µm	%	78.2	7.66	9.8	94	77.8	4.67	0.988	1.26
Fraction > 63 µm	%	21.2	6.10	28.7	80	21.4	3.58	0.853	4.02
Org.matter (L.O.I.)	%	5.32	0.652	12.3	173	5.30	0.400	0.062	1.17



## Consensus Values ISE 869



### Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Fraction < 16 µm	%	42.5	9.01	21.2	44	42.5	5.83	1.70	4.00
TC=Total C (org.+inorg.)	g/kg	30.4	1.03	3.4	192	30.3	0.685	0.093	0.306
TOC=Total Org. C	g/kg	20.3	1.46	7.2	183	20.3	0.830	0.134	0.663
C - org others (W&B a.o.)	g/kg	20.1	2.50	12.4	218	20.1	1.66	0.212	1.05

(cont.)

### Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Moisture-content	%	2.56	0.295	11.5	191	2.58	0.180	0.027	1.04
delta 13C	‰ V-PDB	-18.5	0.372	2.0	16	-18.4	0.200	0.116	0.629
delta 15N	‰ Air	3.64	0.284	7.8	16	3.61	0.198	0.089	2.43

### Method: Fluoride (Swiss standard procedure)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F - Total	mg/kg	392	55.1	14.1	16	391	32.5	17.2	4.40

### 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	16.2	3.22	19.9	152	16.4	1.88	0.326	2.01
Na	cmol+/kg	0.129	0.040	30.9	174	0.130	0.024	0.004	2.93
K	cmol+/kg	0.788	0.101	12.8	218	0.798	0.061	0.009	1.09
Mg	cmol+/kg	1.47	0.242	16.4	215	1.48	0.150	0.021	1.40
Ca	cmol+/kg	32.7	12.3	37.7	206	33.2	7.86	1.08	3.29

### 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	21.5	1.92	9.0	23	21.7	0.880	0.501	2.34
Mg	cmol+/kg	1.42	0.204	14.4	14	1.46	0.155	0.068	4.82

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	cmol+/kg	0.847	0.092	10.9	17	0.857	0.047	0.028	3.31
Mg	cmol+/kg	1.42	0.154	10.8	17	1.41	0.080	0.047	3.29
Ca	cmol+/kg	22.4	2.47	11.0	17	22.2	1.45	0.749	3.34



## Consensus Values ISE 869



### Method: Act. CEC using 0.1M BaCl<sub>2</sub> (UNEP-UN/EC 91065A)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	21.2	1.61	7.6	17	21.4	0.880	0.488	2.30
Na	cmol+/kg	0.079	0.008	10.0	17	0.080	0.005	0.002	3.02
K	cmol+/kg	0.663	0.030	4.6	18	0.662	0.019	0.009	1.35
Ca	cmol+/kg	19.2	1.21	6.3	17	19.5	0.600	0.366	1.91
Mg	cmol+/kg	1.33	0.090	6.8	18	1.35	0.079	0.027	2.00
Mn	cmol+/kg	0.033	0.006	18.0	15	0.033	0.003	0.002	5.82

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	20.4	1.51	7.4	38	20.3	0.859	0.306	1.50
Na	cmol+/kg	0.095	0.015	15.5	30	0.098	0.009	0.003	3.54
K	cmol+/kg	0.811	0.049	6.1	34	0.814	0.027	0.011	1.30
Ca	cmol+/kg	20.3	1.16	5.7	35	20.2	0.563	0.245	1.21
Mg	cmol+/kg	1.38	0.074	5.4	35	1.38	0.034	0.016	1.14
Mn	cmol+/kg	0.019	0.002	9.4	11	0.020	0.001	0.001	3.54

### Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	2.57	0.316	12.3	63	2.58	0.189	0.050	1.94
Ca	mg/kg	6250	631	10.1	103	6226	397	77.7	1.24
Cu	mg/kg	2.85	0.291	10.2	100	2.83	0.184	0.036	1.27
Fe	mg/kg	400	64.1	16.0	98	402	39.7	8.09	2.02
K	mg/kg	305	21.1	6.9	104	304	14.0	2.59	0.848
Mg	mg/kg	197	14.7	7.5	103	197	9.00	1.81	0.920
Mn	mg/kg	99.0	11.9	12.0	102	99.6	7.44	1.47	1.49
Na	mg/kg	27.0	3.97	14.7	65	27.7	2.60	0.616	2.28
P	mg/kg	46.7	4.86	10.4	118	46.9	2.92	0.560	1.20
Zn	mg/kg	12.0	1.36	11.3	100	12.0	0.965	0.170	1.42
Al	mg/kg	226	42.1	18.6	55	220	29.6	7.10	3.14

### Method: Extraction with 0.01M CaCl<sub>2</sub> - 0.005M DTPA 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	1.78	0.357	20.0	61	1.78	0.230	0.057	3.21
Fe	mg/kg	55.1	19.8	36.0	61	55.8	11.6	3.17	5.76
Mn	mg/kg	38.1	6.16	16.2	63	38.5	3.71	0.970	2.54
Zn	mg/kg	5.62	1.14	20.4	63	5.60	0.690	0.180	3.21





## Consensus Values ISE 869



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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
N - NH <sub>4</sub> (as N)	mg/kg	15.1	3.81	25.3	51	15.3	2.56	0.666	4.42

### Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Olsen (as P)	mg/kg	27.8	5.48	19.7	185	27.7	3.29	0.504	1.81
Al - Ox	mg/kg	499	30.5	6.1	18	498	19.2	8.99	1.80
Fe - Ox	mg/kg	3580	325	9.1	18	3611	185	95.9	2.68
P - Ox	mg/kg	272	16.0	5.9	17	273	9.20	4.85	1.78
P - AL (as P)	mg/kg	86.4	11.9	13.8	49	86.3	7.52	2.12	2.46

### Method: UK Soil Methods

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - NaHCO <sub>3</sub> (1/20)	mg/l	24.8	3.59	14.5	61	25.0	2.70	0.574	2.31
K - NH <sub>4</sub> NO <sub>3</sub> (1/5)	mg/l	290	23.0	7.9	61	292	16.7	3.68	1.27
Mg - NH <sub>4</sub> NO <sub>3</sub> (1/5)	mg/l	142	16.2	11.4	61	140	12.0	2.59	1.83
pH - H <sub>2</sub> O (2/5)	...	7.68	0.164	2.1	61	7.68	0.120	0.026	0.342

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	4.15	0.526	12.7	18	4.20	0.342	0.155	3.73
Ba	mg/kg	15.8	1.04	6.5	14	15.7	0.812	0.346	2.18
Cd	mg/kg	0.192	0.032	16.6	17	0.188	0.016	0.010	5.02
Co	mg/kg	2.49	0.260	10.4	15	2.42	0.191	0.084	3.37
Cr	mg/kg	2.12	0.306	14.4	18	2.14	0.195	0.090	4.25
Cu	mg/kg	4.74	0.770	16.2	20	4.55	0.501	0.215	4.54
Ni	mg/kg	4.09	0.574	14.1	19	4.10	0.287	0.165	4.03
Pb	mg/kg	25.1	2.29	9.1	19	25.2	1.37	0.656	2.61
Sr	mg/kg	78.4	2.62	3.3	9	78.4	1.14	1.09	1.39
V	mg/kg	8.57	1.40	16.3	11	8.50	0.774	0.526	6.14
Zn	mg/kg	32.3	5.69	17.6	20	31.8	2.94	1.59	4.92
K	mg/kg	394	54.8	13.9	8	394	35.4	24.2	6.15
Mg	mg/kg	2543	160	6.3	8	2535	63.8	70.9	2.79
P	mg/kg	367	56.6	15.4	10	368	30.8	22.4	6.10



## Indicative Values ISE 869



### Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F	mg/kg	705	321	45.5	6	757	162	164	23.2
Mo	mg/kg	0.473	0.295	62.4	33	0.520	0.170	0.064	13.6
Se	mg/kg	1.11	1.19	107.3	14	1.33	0.974	0.397	35.8
Bi	mg/kg	1.56	1.17	74.7	8	3.15	0.500	0.516	33.0
W	mg/kg	1.73	0.623	35.9	23	1.85	0.430	0.162	9.37

### Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	25.3	12.1	47.8	35	26.7	8.66	2.55	10.1
Mo	mg/kg	0.293	0.123	41.9	23	0.343	0.093	0.032	10.9
Na	mg/kg	179	72.5	40.4	58	189	46.9	11.9	6.64
Se	mg/kg	0.414	0.355	85.7	17	0.370	0.248	0.108	26.0
Si	g/kg	0.297	0.071	24.1	5	0.287	0.041	0.040	13.5
Y	mg/kg	10.1	1.91	18.9	4	9.96	0.975	1.19	11.8
Zr	mg/kg	8.46	3.08	36.4	4	9.41	1.63	1.92	22.7
Sb	mg/kg	0.438	0.358	81.8	20	0.497	0.147	0.100	22.9
Tl	mg/kg	0.263	0.054	20.4	10	0.271	0.030	0.021	8.07
Ag	mg/kg	0.132	0.056	42.2	5	0.132	0.032	0.031	23.6
Ti	mg/kg	187	89.3	47.8	19	181	60.2	25.6	13.7
La	mg/kg	12.1	3.36	27.8	7	11.9	1.80	1.59	13.1
U	mg/kg	0.706	0.316	44.7	5	0.756	0.117	0.176	25.0

### Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ce	mg/kg	34.8	3.46	10.0	5	35.9	1.30	1.94	5.56
La	mg/kg	14.0	3.47	24.7	7	13.9	2.77	1.64	11.7
Nd	mg/kg	15.6	1.93	12.4	4	15.5	1.26	1.21	7.74
Rb	mg/kg	31.4	17.6	56.2	5	31.0	10.2	9.86	31.4
Sc	mg/kg	3.23	1.72	53.2	7	3.57	0.962	0.812	25.1
Th	mg/kg	4.37	0.911	20.8	5	4.24	0.530	0.509	11.6
Y	mg/kg	8.72	1.19	13.7	5	8.70	0.350	0.668	7.66

### Method: Extraction with 0.1M NaNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	µg/kg	0.417	0.131	31.5	4	0.449	0.070	0.082	19.7
Zn	µg/kg	8.92	1.96	22.0	5	9.90	0.800	1.10	12.3



## Indicative Values ISE 869



### Method: Extraction with 0.01M CaCl<sub>2</sub> 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Co	µg/kg	4.61	1.40	30.3	8	5.01	0.918	0.617	13.4
Cu	µg/kg	56.5	24.0	42.5	17	64.0	9.70	7.28	12.9
Fe	mg/kg	2.59	3.20	123.7	13	3.07	1.61	1.11	42.9
N total soluble	mg/kg	24.4	4.97	20.4	10	23.8	3.55	1.97	8.06
N - NO <sub>3</sub> (as N)	mg/kg	2.03	0.877	43.1	35	2.21	0.580	0.185	9.11
SO <sub>4</sub>	mg/kg	87.6	25.2	28.8	11	82.1	14.3	9.51	10.9
Zn	µg/kg	67.7	98.9	146.2	9	100	78.3	41.2	60.9

### Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Active Lime (as CaCO <sub>3</sub> )	%	2.32	1.26	54.4	16	3.00	0.910	0.394	17.0

### Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B - Hot water	mg/kg	1.67	0.621	37.2	43	1.70	0.390	0.118	7.09

### Method: Pot. CEC using 1M or 0.1M BaCl<sub>2</sub>-TEA at pH=8.1 (ISO 13536 OR BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.104	0.069	66.5	11	0.140	0.040	0.026	25.1
K	cmol+/kg	0.923	0.213	23.0	14	1.01	0.141	0.071	7.69
Ca	cmol+/kg	20.6	4.13	20.0	13	21.9	2.19	1.43	6.93

### Method: Pot. CEC using 1M NH<sub>4</sub>Cl (BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	21.5	8.82	41.0	5	21.9	5.10	4.93	22.9
Na	cmol+/kg	0.109	0.042	38.4	16	0.115	0.026	0.013	12.0
Mn	cmol+/kg	0.051	0.015	30.5	12	0.051	0.010	0.006	11.0

### Method: Act. CEC using 0.01M BaCl<sub>2</sub> (ISO 11260)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	21.9	1.86	8.5	6	22.2	0.775	0.951	4.35
Na	cmol+/kg	0.105	0.051	48.2	7	0.100	0.030	0.024	22.8
K	cmol+/kg	0.926	0.072	7.8	7	0.910	0.040	0.034	3.68
Mg	cmol+/kg	1.48	0.042	2.8	7	1.48	0.020	0.020	1.34
Ca	cmol+/kg	21.8	1.86	8.5	7	21.9	1.06	0.878	4.03



## Indicative Values ISE 869



### Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	0.926	0.187	20.2	4	0.987	0.099	0.117	12.6
Cd	mg/kg	0.159	0.012	7.5	6	0.159	0.005	0.006	3.83
Pb	mg/kg	10.6	0.883	8.4	5	10.7	0.470	0.494	4.68

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
N - NO <sub>3</sub> (as N)	mg/kg	2.08	1.31	63.0	54	2.31	0.866	0.223	10.7

### Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Bray (as P)	mg/kg	13.5	12.9	95.6	106	14.0	10.6	1.57	11.6
P - w (as P)	mg/l soil	8.12	2.85	35.2	17	8.78	2.28	0.866	10.7

### 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 <sub>4</sub>	mg/kg	148	50.3	34.0	4	155	30.3	31.5	21.2

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	4.54	1.31	28.9	7	4.59	0.613	0.619	13.7
Be	mg/kg	0.275	0.041	14.8	8	0.273	0.019	0.018	6.53
Mo	mg/kg	0.021	0.016	75.9	9	0.022	0.010	0.007	31.6
Sb	mg/kg	0.022	0.003	11.6	4	0.022	0.001	0.002	7.23
Ti	mg/kg	5.33	1.08	20.3	6	5.44	0.587	0.552	10.4
Al	g/kg	0.929	0.102	10.9	7	0.935	0.030	0.048	5.17
Fe	g/kg	3.03	0.993	32.8	10	3.30	0.648	0.392	13.0
Mn	mg/kg	334	62.1	18.6	11	344	56.5	23.4	7.00
Na	mg/kg	70.1	4.83	6.9	6	68.9	2.66	2.46	3.52
S	mg/kg	65.3	34.9	53.5	4	63.2	16.6	21.8	33.4
Ca	g/kg	32.6	9.68	29.7	4	33.0	4.42	6.05	18.6