



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Soil-Analytical Exchange

REFERENCE MATERIAL

ISE sample 851



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 851 of Alluvium, from Switzerland, 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
2022	1	4
2019	1	1
2016	2	4



Consensus Values ISE 851



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	71.4	2.73	3.8	58	71.1	1.65	0.448	0.627
As	mg/kg	18.1	1.37	7.6	48	18.3	0.945	0.247	1.37
Ba	mg/kg	365	21.5	5.9	47	361	16.7	3.92	1.07
Br	mg/kg	8.43	0.437	5.2	21	8.40	0.400	0.119	1.42
Ca	g/kg	39.4	1.88	4.8	60	39.3	1.15	0.304	0.772
Cd	mg/kg	0.360	0.046	12.8	23	0.360	0.030	0.012	3.35
Co	mg/kg	14.1	1.43	10.2	47	14.0	0.900	0.261	1.86
Cr	mg/kg	102	8.49	8.3	61	102	5.60	1.36	1.33
Cu	mg/kg	43.7	3.35	7.7	57	44.0	2.10	0.554	1.27
Fe	g/kg	32.9	1.37	4.2	63	33.0	0.900	0.216	0.656
Ga	mg/kg	18.6	1.95	10.5	32	18.6	1.45	0.431	2.32
K	mg/kg	21932	993	4.5	65	21900	610	154	0.702
Li	mg/kg	71.6	5.25	7.3	8	73.3	3.33	2.32	3.24
Mg	mg/kg	10621	650	6.1	59	10602	375	106	0.997
Mn	mg/kg	725	44.0	6.1	66	725	31.5	6.77	0.934
Mo	mg/kg	0.754	0.133	17.6	21	0.765	0.065	0.036	4.80
Na	mg/kg	5907	436	7.4	52	5970	280	75.5	1.28
Ni	mg/kg	49.1	3.96	8.1	56	49.0	2.20	0.661	1.35
P	mg/kg	1407	100	7.1	56	1408	58.0	16.8	1.19
Pb	mg/kg	27.2	2.32	8.6	57	27.0	1.20	0.385	1.42
Rb	mg/kg	133	5.87	4.4	39	134	4.00	1.17	0.886
S	mg/kg	669	117	17.5	53	660	72.0	20.1	3.01
Si	g/kg	255	5.51	2.2	46	255	3.30	1.02	0.398
Sn	mg/kg	3.87	0.517	13.4	22	3.94	0.265	0.138	3.56
Sr	mg/kg	264	20.0	7.6	46	266	11.0	3.69	1.40
Y	mg/kg	22.2	2.19	9.9	31	22.0	1.20	0.491	2.21
Zn	mg/kg	112	8.13	7.3	63	112	4.14	1.28	1.15
Zr	mg/kg	129	9.91	7.7	31	130	5.00	2.23	1.73
C-elementary	g/kg	51.4	1.27	2.5	92	51.2	0.720	0.165	0.321
Tl	mg/kg	0.748	0.046	6.2	13	0.766	0.022	0.016	2.15
V	mg/kg	129	10.1	7.8	54	129	6.50	1.72	1.33
Ti	mg/kg	3855	246	6.4	51	3856	187	43.0	1.12
N - elementary	g/kg	4.68	0.211	4.5	155	4.66	0.140	0.021	0.452
Ce	mg/kg	64.8	5.34	8.2	27	64.9	3.19	1.29	1.98
La	mg/kg	33.9	2.18	6.4	27	33.3	1.55	0.523	1.55
Nb	mg/kg	13.1	0.996	7.6	23	13.0	0.700	0.260	1.97
Nd	mg/kg	26.6	4.00	15.0	23	26.6	2.30	1.04	3.92



Consensus Values ISE 851



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Sc	mg/kg	12.8	2.26	17.6	14	12.8	0.865	0.755	5.89
Th	mg/kg	11.1	1.11	10.0	23	11.2	0.700	0.289	2.60
U	mg/kg	2.83	0.557	19.7	19	2.90	0.300	0.160	5.64
Hg	µg/kg	74.4	5.40	7.3	43	74.0	3.60	1.03	1.38

(cont.)

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	15.7	1.91	12.2	57	15.6	1.07	0.316	2.01
Ca	g/kg	36.7	5.12	14.0	42	36.4	3.25	0.987	2.69
Cd	mg/kg	0.352	0.070	20.0	67	0.358	0.042	0.011	3.05
Co	mg/kg	12.3	1.40	11.4	61	12.2	0.990	0.224	1.82
Cr	mg/kg	39.6	10.6	26.9	75	40.0	6.88	1.54	3.88
Cu	mg/kg	41.7	3.85	9.2	78	42.1	2.47	0.544	1.31
Fe	g/kg	29.2	3.85	13.2	41	29.4	2.39	0.751	2.57
Mg	mg/kg	7927	1002	12.6	41	7771	684	196	2.47
Mn	mg/kg	694	64.4	9.3	49	690	42.8	11.5	1.66
Mo	mg/kg	0.693	0.117	16.9	25	0.690	0.065	0.029	4.22
N	g/kg	4.53	0.304	6.7	81	4.55	0.192	0.042	0.933
Ni	mg/kg	42.2	3.92	9.3	73	42.1	2.60	0.574	1.36
P	mg/kg	1293	142	11.0	59	1274	96.0	23.2	1.79
Pb	mg/kg	24.3	3.07	12.7	74	24.5	2.00	0.446	1.84
S	mg/kg	695	92.9	13.4	35	684	63.6	19.6	2.83
Sr	mg/kg	215	4.66	2.2	8	214	3.07	2.06	0.960
Zn	mg/kg	103	9.46	9.2	78	102	6.97	1.34	1.30
Hg	µg/kg	73.8	16.1	21.8	46	75.1	10.1	2.97	4.02

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ag	µg/kg	129	12.5	9.7	10	133	8.00	4.93	3.83
Al	g/kg	17.9	3.29	18.4	67	18.1	1.89	0.502	2.81
As	mg/kg	16.3	1.38	8.5	78	16.1	0.925	0.195	1.20
Ba	mg/kg	66.3	15.6	23.6	26	68.6	10.6	3.83	5.78
Be	mg/kg	0.941	0.088	9.4	32	0.950	0.050	0.019	2.07
Ca	g/kg	37.6	2.11	5.6	74	37.6	1.35	0.306	0.814
Cd	mg/kg	0.363	0.055	15.1	90	0.364	0.037	0.007	1.99
Co	mg/kg	12.6	1.25	9.9	78	12.6	0.900	0.177	1.40
Cr	mg/kg	36.2	4.11	11.3	100	36.5	2.25	0.513	1.42



Consensus Values ISE 851



Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	43.8	2.94	6.7	103	43.9	1.90	0.362	0.827
Fe	g/kg	29.9	2.00	6.7	83	29.9	1.16	0.275	0.919
Hg	µg/kg	75.7	8.73	11.5	36	76.0	5.55	1.82	2.40
K	mg/kg	3050	1049	34.4	66	3248	715	161	5.29
Mg	mg/kg	7789	728	9.3	74	7699	431	106	1.36
Mn	mg/kg	685	45.7	6.7	83	680	30.0	6.27	0.915
Mo	mg/kg	0.727	0.126	17.3	41	0.740	0.073	0.025	3.38
Ni	mg/kg	43.9	4.25	9.7	105	43.9	2.63	0.519	1.18
P	mg/kg	1335	107	8.0	71	1330	62.2	15.8	1.18
Pb	mg/kg	24.6	3.21	13.0	106	24.8	2.17	0.390	1.58
S	mg/kg	696	51.8	7.4	56	693	36.5	8.65	1.24
Se	mg/kg	0.582	0.079	13.6	24	0.590	0.045	0.020	3.47
Sr	mg/kg	220	21.3	9.7	17	218	9.00	6.45	2.93
U	mg/kg	0.797	0.050	6.3	19	0.793	0.041	0.014	1.81
V	mg/kg	34.8	3.86	11.1	41	35.6	2.38	0.754	2.17
Zn	mg/kg	105	7.61	7.2	108	105	5.00	0.915	0.871

Method: Extraction with boiling 2M HNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	mg/kg	0.361	0.038	10.5	54	0.362	0.021	0.006	1.78
Co	mg/kg	12.0	0.839	7.0	54	12.0	0.550	0.143	1.19
Cr	mg/kg	28.2	1.96	6.9	60	28.1	1.19	0.316	1.12
Cu	mg/kg	40.3	2.08	5.2	60	40.5	1.20	0.336	0.834
Hg	µg/kg	70.2	8.48	12.1	49	70.6	4.62	1.51	2.16
Ni	mg/kg	39.2	2.81	7.2	60	39.1	1.68	0.453	1.15
Pb	mg/kg	24.8	2.07	8.4	60	24.8	1.25	0.335	1.35
Tl	mg/kg	0.051	0.004	7.0	16	0.052	0.002	0.001	2.19
Zn	mg/kg	91.0	5.15	5.7	60	90.3	3.03	0.831	0.913

Method: Extraction with 0.1M NaNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	µg/kg	209	37.6	18.0	20	208	23.0	10.5	5.04
Ni	µg/kg	31.2	3.52	11.3	18	30.9	2.19	1.04	3.33



Consensus Values ISE 851

Method: Extraction with 0.01M CaCl₂ 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	mg/kg	122	6.54	5.4	25	121	4.30	1.64	1.34
Mg	mg/kg	92.1	5.74	6.2	20	91.9	3.34	1.61	1.74
N - NO ₃ (as N)	mg/kg	18.0	1.57	8.7	21	17.7	0.880	0.428	2.38
Na	mg/kg	10.2	0.766	7.5	18	10.3	0.480	0.226	2.21

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pH - H ₂ O	...	7.62	0.234	3.1	270	7.62	0.156	0.018	0.234
pH - KCl	...	7.32	0.209	2.9	118	7.31	0.150	0.024	0.329
pH - CaCl ₂	...	7.23	0.126	1.7	97	7.23	0.071	0.016	0.221
Fraction < 2 µm	%	29.1	7.90	27.2	79	28.8	5.09	1.11	3.82
TIC=Tot.Inorg C(as CaCO ₃)	%	8.33	0.926	11.1	95	8.31	0.521	0.119	1.43
EC-SC (ISO 11265)	mS/m	19.5	3.50	18.0	117	19.8	2.00	0.404	2.08
Fraction < 63 µm	%	88.2	4.06	4.6	52	88.1	2.74	0.704	0.798
Fraction > 63 µm	%	11.6	3.45	29.7	47	11.8	2.20	0.629	5.42
Org.matter (L.O.I.)	%	9.83	0.760	7.7	99	9.82	0.470	0.095	0.971
Fraction < 16 µm	%	65.1	9.44	14.5	23	65.0	6.62	2.46	3.78
TC=Total C (org.+inorg.)	g/kg	51.3	1.50	2.9	106	51.4	0.935	0.182	0.355
TOC=Total Org. C	g/kg	41.2	2.60	6.3	114	41.2	1.72	0.305	0.740
C - org others (W&B a.o.)	g/kg	40.6	5.50	13.6	139	40.8	3.17	0.584	1.44

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Moisture-content	%	1.94	0.282	14.5	119	1.96	0.180	0.032	1.66
delta 13C	‰ V-PDB	-21.6	0.313	1.5	10	-21.5	0.155	0.124	0.574
delta 15N	‰ Air	5.63	0.418	7.4	10	5.65	0.235	0.165	2.94

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	17.3	5.25	30.3	101	17.1	3.00	0.653	3.77
K	cmol+/kg	0.553	0.081	14.7	148	0.558	0.049	0.008	1.51
Mg	cmol+/kg	1.24	0.215	17.3	143	1.25	0.124	0.022	1.81
Ca	cmol+/kg	28.9	9.52	32.9	137	28.7	6.06	1.02	3.52



Consensus Values ISE 851

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	25.6	2.99	11.7	17	26.3	2.07	0.906	3.53
K	cmol+/kg	0.792	0.111	14.0	10	0.790	0.055	0.044	5.54
Mg	cmol+/kg	1.21	0.156	12.9	10	1.23	0.085	0.062	5.10
Ca	cmol+/kg	22.9	3.49	15.2	10	22.6	2.85	1.38	6.02

Method: Pot. CEC using 1M NH₄Cl (BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mg	cmol+/kg	1.18	0.165	14.0	9	1.18	0.089	0.069	5.84

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	1.65	8.1	23	20.4	0.800	0.431	2.11
K	cmol+/kg	0.598	0.042	7.0	20	0.594	0.030	0.012	1.96
Ca	cmol+/kg	21.0	1.19	5.7	20	21.0	0.586	0.332	1.59
Mg	cmol+/kg	1.13	0.081	7.2	20	1.14	0.040	0.023	2.00

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	5.02	0.360	7.2	35	4.95	0.200	0.076	1.52
Ca	mg/kg	5710	640	11.2	69	5660	361	96.3	1.69
Cu	mg/kg	13.7	1.34	9.8	64	13.5	0.712	0.209	1.53
Fe	mg/kg	427	51.6	12.1	63	420	29.9	8.12	1.90
K	mg/kg	226	20.3	9.0	72	225	11.3	2.99	1.32
Mg	mg/kg	177	15.8	8.9	69	177	9.20	2.37	1.34
Mn	mg/kg	113	14.8	13.1	64	112	8.89	2.31	2.05
P	mg/kg	180	21.4	11.9	78	180	12.5	3.03	1.68
Zn	mg/kg	11.0	1.04	9.4	63	11.1	0.669	0.164	1.49
Al	mg/kg	314	43.0	13.7	34	312	26.6	9.22	2.94

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	7.74	1.09	14.0	47	7.70	0.600	0.198	2.56
Fe	mg/kg	88.1	25.4	28.9	47	86.4	13.8	4.63	5.26
Mn	mg/kg	27.5	7.05	25.6	47	26.8	4.79	1.29	4.67
Zn	mg/kg	4.77	0.885	18.5	46	4.77	0.530	0.163	3.42



Consensus Values ISE 851

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	12.0	2.52	21.0	23	12.5	1.55	0.658	5.46
N - NO ₃ (as N)	mg/kg	17.6	3.17	18.0	27	17.7	2.00	0.763	4.34

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Olsen (as P)	mg/kg	67.9	11.4	16.8	111	67.8	7.10	1.36	2.00
Al - Ox	mg/kg	977	94.3	9.7	10	965	50.0	37.3	3.81
Fe - Ox	mg/kg	4021	349	8.7	10	3925	163	138	3.43
P - Ox	mg/kg	810	60.4	7.5	10	803	36.0	23.9	2.95
P - AL (as P)	mg/kg	330	29.5	9.0	29	322	20.6	6.85	2.08

Method: UK Soil Methods

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P – NaHCO ₃ (1/20)	mg/l	55.5	8.54	15.4	34	55.0	5.60	1.83	3.30
K - NH ₄ NO ₃ (1/5)	mg/l	179	19.6	10.9	36	181	12.5	4.08	2.27
Mg - NH ₄ NO ₃ (1/5)	mg/l	97.9	12.0	12.3	36	96.4	8.60	2.50	2.55
pH - H ₂ O (2/5)	...	7.64	0.161	2.1	37	7.65	0.120	0.033	0.433



Indicative Values ISE 851



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
I	mg/kg	3.07	0.580	18.9	7	2.82	0.580	0.274	8.93
Sb	mg/kg	0.873	0.218	25.0	17	0.870	0.150	0.066	7.58
Be	mg/kg	2.31	0.580	25.1	11	2.30	0.330	0.218	9.45
Ag	mg/kg	0.163	0.059	36.3	4	0.177	0.032	0.037	22.7
Cs	mg/kg	9.01	2.38	26.4	13	9.40	1.40	0.824	9.15
W	mg/kg	2.98	1.04	35.0	11	3.00	0.600	0.393	13.2

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	18.1	6.30	34.7	35	18.0	3.80	1.33	7.34
B	mg/kg	29.5	30.4	102.9	22	28.7	23.4	8.09	27.4
Ba	mg/kg	82.3	30.7	37.3	39	80.0	22.0	6.15	7.47
K	mg/kg	3235	2521	77.9	46	3279	1723	465	14.4
Li	mg/kg	54.8	5.02	9.2	5	54.5	3.65	2.81	5.13
Na	mg/kg	268	258	96.4	33	277	177	56.2	21.0
Se	mg/kg	0.493	0.460	93.4	15	0.684	0.356	0.148	30.1
Sn	mg/kg	1.36	0.634	46.8	14	1.54	0.315	0.212	15.6
Y	mg/kg	12.6	3.03	24.0	4	13.1	1.41	1.90	15.0
V	mg/kg	39.8	13.8	34.7	38	42.9	10.1	2.80	7.03
Sb	mg/kg	0.656	0.336	51.3	17	0.640	0.160	0.102	15.5
Be	mg/kg	1.12	0.348	31.2	29	1.10	0.210	0.081	7.23
Tl	mg/kg	0.343	0.122	35.5	7	0.372	0.119	0.057	16.8
Ti	mg/kg	52.7	15.5	29.4	9	56.5	4.50	6.46	12.3
La	mg/kg	6.91	0.545	7.9	4	6.86	0.263	0.341	4.93

Method: Aqua Regia (ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	17.5	5.15	29.4	27	17.4	3.63	1.24	7.06
Bi	mg/kg	0.419	0.035	8.4	6	0.421	0.013	0.018	4.27
Ce	mg/kg	13.8	2.07	14.9	5	14.5	1.30	1.15	8.34
La	mg/kg	6.22	1.13	18.1	5	6.36	0.690	0.631	10.1
Li	mg/kg	56.0	12.7	22.7	15	56.4	7.80	4.11	7.34
Na	mg/kg	187	83.5	44.7	58	210	53.4	13.7	7.34
Sb	mg/kg	0.568	0.144	25.3	19	0.581	0.074	0.041	7.26
Sn	mg/kg	1.06	0.242	22.7	15	1.03	0.139	0.078	7.33
Ti	mg/kg	76.1	25.3	33.2	19	73.0	23.0	7.25	9.53
Tl	mg/kg	0.140	0.036	25.5	18	0.148	0.021	0.011	7.50



Indicative Values ISE 851

Method: Aqua Regia (ISO 11466)									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Y	mg/kg	13.0	1.32	10.2	4	13.0	0.600	0.826	6.36
Method: Extraction with boiling 2M HNO ₃									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mo	mg/kg	0.283	0.085	30.0	35	0.309	0.044	0.018	6.34
Method: Extraction with 0.1M NaNO ₃									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Zn	µg/kg	8.45	4.09	48.5	5	7.18	2.42	2.29	27.1
Method: Extraction with 0.01M CaCl ₂ 1:10									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	µg/kg	283	80.9	28.6	13	279	40.4	28.0	9.91
Co	µg/kg	5.88	1.32	22.5	6	5.95	0.755	0.674	11.5
Cu	µg/kg	216	50.3	23.2	12	210	37.9	18.2	8.39
Fe	mg/kg	1.02	0.948	92.7	9	1.07	0.530	0.395	38.6
Mn	mg/kg	1.11	0.288	25.9	12	1.12	0.110	0.104	9.36
N total soluble	mg/kg	63.5	15.8	24.9	6	62.1	10.4	8.07	12.7
N - NH ₄ (as N)	mg/kg	8.49	2.12	25.0	24	8.34	1.50	0.541	6.37
P	mg/kg	3.33	0.806	24.2	19	3.60	0.570	0.231	6.95
SO ₄	mg/kg	42.8	11.9	27.9	6	43.1	8.60	6.09	14.2
Method: Soil characteristics									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Active Lime (as CaCO ₃)	%	1.99	1.97	99.1	12	2.53	1.49	0.711	35.8
Method: Other determinations									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B - Hot water	mg/kg	1.53	0.673	44.0	31	1.60	0.430	0.151	9.87
Method: Fluoride (Swiss standard procedure)									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F - Total	mg/kg	888	195	21.9	8	870	68.0	86.0	9.68



Indicative Values ISE 851

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.070	0.039	56.5	117	0.071	0.021	0.005	6.53

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	0.075	0.034	45.0	5	0.080	0.020	0.019	25.1

Method: Pot. CEC using 1M NH₄Cl (BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.086	0.074	86.5	9	0.092	0.056	0.031	36.0
K	cmol+/kg	0.565	0.101	18.0	9	0.561	0.061	0.042	7.49
Ca	cmol+/kg	18.3	3.89	21.3	9	18.2	2.24	1.62	8.86
Mn	cmol+/kg	0.025	0.016	63.2	6	0.024	0.012	0.008	32.3
Fe	cmol+/kg	0.001	0.000	1.9	4	0.001	0.000	0.000	1.20

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	25.5	1.64	6.4	5	25.0	0.670	0.917	3.60
K	cmol+/kg	0.767	0.031	4.0	5	0.770	0.020	0.017	2.26
Mg	cmol+/kg	1.23	0.153	12.5	5	1.25	0.070	0.086	6.96
Ca	cmol+/kg	25.8	2.35	9.1	5	26.2	1.47	1.31	5.09

Method: Act. CEC using 0.1M BaCl₂ (UNEP-UN/EC 91065A)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	24.4	0.636	2.6	5	24.5	0.360	0.356	1.46
Na	cmol+/kg	0.045	0.002	4.2	4	0.045	0.001	0.001	2.61
K	cmol+/kg	0.565	0.012	2.1	4	0.565	0.010	0.008	1.34
Ca	cmol+/kg	22.9	0.742	3.2	4	23.0	0.337	0.464	2.03
Mg	cmol+/kg	1.16	0.068	5.9	4	1.17	0.039	0.043	3.67

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

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.054	0.015	27.8	18	0.054	0.008	0.004	8.19

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	mg/kg	14.3	4.72	33.0	39	15.5	3.18	0.944	6.61
Cd	mg/kg	0.207	0.016	7.5	4	0.208	0.011	0.010	4.70



Indicative Values ISE 851

Method: Mehlich-3									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Pb	mg/kg	7.04	0.722	10.3	4	7.04	0.410	0.451	6.41
Method: Phosphorus and related analysis									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Bray (as P)	mg/kg	74.7	50.9	68.1	67	71.1	34.6	7.77	10.4
P - w (as P)	mg/l soil	25.1	9.98	39.7	12	25.0	6.85	3.60	14.3
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	21.1	11.0	52.0	6	22.3	7.39	5.61	26.5