WAGENINGEN EVALUATING PROGRAMS

FOR ANALYTICAL LABORATORIES

Certificate of Analysis

International Plant-Analytical Exchange

REFERENCE MATERIAL

IPE sample 135

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis IPE 135

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 IPE samples are dried at 70°C and milled to pass a 0.5 mm sieve.

This IPE sample 135 of Rice (polished) / Oryza sativa l., from Philippines, 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	1	4
2021	2	2
2018	2	1
2013	1	4
2009	1	4

Consensus Values IPE 135

Method: Inorganic Chemical Composition

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	2.66	0.978	36.7	332	2.70	0.604	0.067	2.52
Cu	mg/kg	2.94	0.539	18.3	483	2.97	0.317	0.031	1.04
Fe	mg/kg	8.25	3.53	42.8	438	8.53	2.32	0.211	2.55
Mn	mg/kg	9.23	1.15	12.4	488	9.23	0.705	0.065	0.704
Zn	mg/kg	14.3	1.51	10.6	512	14.3	0.940	0.084	0.585
As	µg/kg	86.7	16.4	18.9	107	87.4	10.6	1.98	2.28
Co	µg/kg	17.7	4.80	27.1	96	18.2	2.66	0.612	3.46
Hg	µg/kg	2.27	0.756	33.3	54	2.33	0.450	0.129	5.66
Mo	µg/kg	909	94.0	10.3	156	915	57.6	9.41	1.04
Se	µg/kg	26.5	8.64	32.6	59	27.0	4.70	1.41	5.30
Cs	µg/kg	9.56	1.82	19.0	19	9.90	1.10	0.522	5.46
Rb	µg/kg	1788	213	11.9	36	1816	135	44.4	2.48
Ca	g/kg	0.066	0.050	76.4	404	0.073	0.033	0.003	4.75
K	g/kg	0.928	0.131	14.2	532	0.936	0.076	0.007	0.767
Mg	g/kg	0.372	0.041	11.0	515	0.370	0.026	0.002	0.605
N - Kjeldahl (as N)	g/kg	13.7	0.846	6.2	337	13.7	0.550	0.058	0.421
P (as P)	g/kg	1.28	0.108	8.5	535	1.29	0.070	0.006	0.457
S (as S)	g/kg	1.04	0.110	10.6	308	1.04	0.063	0.008	0.756

Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
C - elementary	g/kg	439	18.3	4.2	169	439	12.3	1.76	0.402
N - elementary	g/kg	14.1	0.695	4.9	246	14.2	0.469	0.055	0.392

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
delta 13C	‰ V-PDB	-28.8	0.280	1.0	27	-28.8	0.160	0.067	0.234
delta 15N	‰ Air	4.42	0.373	8.4	24	4.45	0.200	0.095	2.16

Method: Nutritional values

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total ash	g/kg	4.99	1.50	30.0	63	5.20	0.800	0.236	4.72

Indicative Values IPE 135

Method: Inorganic Chemical Composition

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Br	mg/kg	0.108	0.051	47.7	21	0.120	0.026	0.014	13.0
Cd	µg/kg	7.63	3.45	45.2	79	8.02	2.02	0.485	6.36
Cr	µg/kg	55.0	63.2	114.9	68	65.2	44.6	9.58	17.4
I	µg/kg	28.4	8.23	29.0	7	30.0	4.00	3.89	13.7
Li	µg/kg	9.42	9.12	96.8	14	12.5	6.62	3.05	32.4
Ni	µg/kg	54.5	52.4	96.2	65	67.8	35.3	8.13	14.9
Pb	µg/kg	32.9	21.3	64.6	88	36.2	13.3	2.83	8.61
Ba	mg/kg	0.109	0.078	71.9	37	0.120	0.052	0.016	14.8
Sb	µg/kg	3.64	3.93	108.0	28	4.22	2.44	0.929	25.5
Sn	µg/kg	21.7	31.7	146.2	14	30.4	23.7	10.6	48.8
Ti	mg/kg	0.766	1.26	164.7	12	0.750	0.592	0.455	59.4
V	µg/kg	8.01	11.3	140.5	24	10.0	6.76	2.87	35.9
Sr	mg/kg	0.153	0.093	60.6	36	0.175	0.060	0.019	12.6
Ag	µg/kg	4.05	9.31	229.9	9	6.53	5.82	3.88	95.8
Cl (as Cl)	g/kg	0.254	0.129	51.0	92	0.270	0.080	0.017	6.64
N - NH4 (as N)	mg/kg	13.7	13.0	95.4	8	17.5	7.94	5.77	42.2
N - NO3 (as N)	mg/kg	9.47	10.7	113.4	16	16.5	7.63	3.36	35.4
Na	mg/kg	12.9	13.8	106.8	241	15.4	10.6	1.11	8.60
SO4 (as SO4)	g/kg	0.054	0.053	98.7	11	0.074	0.034	0.020	37.2

Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	mg/kg	5.66	7.89	139.3	36	8.42	6.76	1.64	29.0

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	mg/kg	1.79	1.81	101.1	67	2.09	1.30	0.276	15.4
Si	mg/kg	39.5	39.1	98.9	10	48.0	31.2	15.5	39.1

Method: Nutritional values

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Crude fibre	g/kg	4.50	6.42	142.6	15	5.45	4.45	2.07	46.0
ADF-ash-free	g/kg	6.28	4.64	73.8	16	6.87	2.70	1.45	23.1
NDF-ash-free	g/kg	12.6	10.6	83.8	14	15.5	8.00	3.54	28.0
Total fat	g/kg	8.75	5.45	62.3	26	9.07	3.40	1.34	15.3
Polysaccharides (starch)	g/kg	851	56.7	6.7	5	855	35.0	31.7	3.72