WAGENINGEN EVALUATING PROGRAMS

FOR ANALYTICAL LABORATORIES

Certificate of Analysis

International Plant-Analytical Exchange

REFERENCE MATERIAL

IPE sample 248

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis IPE 248

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 248 of Rice / Oryza sativa l., from Netherlands, 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
2025	1	1
2024	4	4
2020	2	1

Consensus Values IPE 248

Method: Inorganic Chemical Composition

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	1.94	0.478	24.6	236	1.97	0.270	0.039	2.00
Fe	mg/kg	11.0	3.32	30.3	229	11.3	2.06	0.275	2.50
Mn	mg/kg	24.8	2.59	10.4	256	25.0	1.69	0.202	0.813
Zn	mg/kg	13.0	1.61	12.4	252	13.1	0.980	0.127	0.975
As	µg/kg	253	28.2	11.2	47	251	18.1	5.15	2.03
Cd	µg/kg	9.54	2.12	22.2	38	9.53	1.25	0.430	4.51
Co	µg/kg	39.5	5.53	14.0	41	40.1	3.57	1.08	2.73
Mo	µg/kg	494	69.8	14.1	73	503	44.9	10.2	2.07
Pb	µg/kg	75.5	23.5	31.1	43	73.7	15.8	4.47	5.93
Ba	mg/kg	0.661	0.136	20.6	18	0.666	0.095	0.040	6.07
Sr	mg/kg	0.472	0.080	16.9	14	0.473	0.060	0.027	5.66
Ca	g/kg	0.109	0.046	42.2	220	0.119	0.029	0.004	3.56
K	g/kg	2.19	0.208	9.5	277	2.19	0.128	0.016	0.715
Mg	g/kg	1.14	0.100	8.7	270	1.15	0.060	0.008	0.663
N - Kjeldahl (as N)	g/kg	12.8	0.821	6.4	164	12.9	0.540	0.080	0.627
Na	mg/kg	37.2	14.4	38.7	146	38.3	8.52	1.49	4.01
P (as P)	g/kg	2.83	0.222	7.9	283	2.82	0.148	0.017	0.584
S (as S)	g/kg	0.997	0.102	10.2	169	1.00	0.060	0.010	0.982

Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
C - elementary	g/kg	446	14.0	3.1	111	446	7.42	1.66	0.372
N - elementary	g/kg	13.1	0.688	5.3	160	13.1	0.415	0.068	0.519

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
delta 13C	‰ V-PDB	-28.6	0.169	0.6	19	-28.6	0.090	0.049	0.170
delta 15N	‰ Air	7.09	0.355	5.0	19	7.10	0.170	0.102	1.44

Method: Nutritional values

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total ash	g/kg	12.4	2.08	16.8	38	12.2	1.25	0.422	3.40
Total fat	g/kg	22.8	4.32	19.0	18	22.2	3.21	1.27	5.58

Indicative Values IPE 248

Method: Inorganic Chemical Composition

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	1.15	0.801	69.4	148	1.20	0.587	0.082	7.13
Cr	µg/kg	46.5	39.9	85.8	32	59.8	29.6	8.82	19.0
Hg	µg/kg	3.25	1.16	35.8	31	3.52	0.580	0.261	8.03
Li	µg/kg	10.1	4.91	48.6	7	10.7	1.66	2.32	23.0
Ni	µg/kg	133	43.7	32.8	39	143	26.4	8.75	6.57
Se	µg/kg	36.9	14.2	38.4	31	38.9	8.41	3.18	8.62
Sb	µg/kg	1.35	0.797	59.1	8	1.58	0.490	0.352	26.1
V	µg/kg	9.81	4.74	48.3	10	10.0	1.65	1.87	19.1
Rb	µg/kg	21756	489	2.2	5	21746	295	273	1.26
Cl (as Cl)	g/kg	0.291	0.166	57.1	33	0.320	0.110	0.036	12.4
N - NO3 (as N)	mg/kg	12.2	8.50	69.7	9	14.0	5.06	3.54	29.0

Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	mg/kg	7.95	9.80	123.1	22	9.61	6.57	2.61	32.8
Si	mg/kg	172	203	118.2	9	272	124	84.7	49.3

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	mg/kg	4.09	3.71	90.6	38	4.76	2.58	0.752	18.4
Si	mg/kg	87.9	119	135.8	8	108	76.7	52.8	60.0

Method: Nutritional values

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Crude fibre	g/kg	5.11	3.32	65.1	14	5.65	2.35	1.11	21.8
ADF-ash-free	g/kg	15.8	7.14	45.3	7	18.8	3.90	3.38	21.4
Total monosaccharides	g/kg	8.19	2.94	35.9	4	9.00	0	1.84	22.4